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BY A. DICKSON WRIGHT, M.S.Lond., F.R.C.S.Eng.
ASSISTANT SURGEON TO ST. MARY'S HOSPITAL AND TO THE PRINCE OF WALES'S HOSPITAL, LONDON

THE subject of arterial disease of the extremities seems to attract much more attention now than it ever did before and it is possible that this type of disease is on the increase. There has been also a greater tendency for these diseases to become surgical in other respects than in the removing of the dead limb after the circulation has failed completely.

I do not intend to discuss the question of simple aneurysms of the extremities; they are of rare occurrence and their treatment is straightforward.

*Arteriovenous aneurysms* are of two types, congenital and acquired. In the former type there are multitudinous arteriovenous connexions with a swollen blue cold limb, sometimes longer and sometimes shorter than its fellow from over- or under-nutrition. The limb is usually diagnosed as being the seat of a diffuse angioma, and the only treatment consists in the excision of the larger superficial venous trunks. In acquired cases due to simultaneous trauma of contiguous artery and vein a very characteristic syndrome ensues in which the lower part of the leg shows all the usual changes which follow upon long-standing varicose veins, together with great swelling of the leg and progressive deterioration of the circulation of the extremity owing to the blood being short-circuited into the venous circulation. The heart in time is seriously affected and becomes hypertrophied and dilated owing to the rapid venous return; and it is interesting that one of the greatest observers of all time, to wit Osler, should have forbidden operation on all his patients with this condition because they had enlarged hearts, not realising that the cure of the heart condition lay in treating the aneurysm. The treatment is quadruple ligation of artery and vein above and below the connexion or excision of the connecting channel. Proximal arterial ligation amounts to malpraxis, because gangrene always follows.

*Arterial embolism* of the extremities is a most important condition to diagnose immediately. If it is diagnosed quickly there is a 50 per cent. chance of saving the limb; it is the most urgent of all emergencies because with every minute wasted recedes the chance of success. It occurs in patients with auricular fibrillation and such cardiac stagnation that clots form in the heart. The syndrome of sudden agonising pain in the limb followed by cadaveric paleness and lividity with a sharp line of demarcation is so characteristic that once seen it is never forgotten. The clot always straddles an arterial bifurcation and is located by the signs or by radiographic visualisation of the arteries by injection of radio-opaque fluid. The treatment consists in incising the artery and withdrawing the clot and then suturing the artery with vaselined silk. Occasionally excision of the portion of the artery containing the clot is done.

The *diseases which reduce the arterial calibre* may be divided into two main classes:—

1. Those due to vasomotor neurosis—diseases of women and the upper limbs.
2. Those due to the formation of inflammatory or other deposits in the arterial coats—diseases of men and the lower limbs.

It is important to realise that in both types arterial thrombosis is liable to occur and produce sudden changes for the worse in the clinical picture.

### VASOMOTOR NEUROSIS

The classical *Raynaud's disease* is a very definite clinical picture with 90 per cent. of cases occurring in women, usually in the third decade of life. The disease affects the hands more than the feet and is characterised by blanching of the fingers followed by lividity on exposure to cold, with increase in the ischæmia; ulcers and gangrene follow. The treatment consists in careful protection from cold and thorough elimination of the usual septic foci. When really troublesome the disease can be cured with certainty by the operation of ganglionectomy.

*Erythromelalgia* is the opposite of Raynaud's disease, the fingers becoming hot and red instead of blue and cold. To my knowledge no case of this rare but very distressing complaint has been treated by sympathectomy. The operation would do good in my opinion, because I have noticed a condition of temporary erythromelalgia following ganglionectomy and disappearing in a few days.

*Acrocyanosis* is a condition frequently found in young women; the forearm, hands, and fingers are blue and swollen all the time, and chilblains are always coming and going. In bad cases there is enough discomfort to justify stellate ganglionectomy which is almost always successful. It is almost certain that in this disease the veins are also affected; there is no reason why they should not have vasomotor nerves.

*Erythrocyanosis crurum puellarum frigida* is a similar condition occurring in the legs after puberty. This is a disease of the greatest concern to young women and seems to be more common in Scotland than in England. It consists in a blue swelling of the back of the leg and ankle; the skin is "goosy" and the surface very cold. The feet are cold, though not so cold as the legs, and are subject to chilblains. A very constant painful swelling is present over the insertion of the tendo Achillis. The treatment is very unsatisfactory; the painful heel can be relieved by wearing a rubber heel cushion to lift the heel out of the shoe. Elastic stockings of the Lastex type are useful. No ganglionectomies have been recorded for this disease, but much more unjustifiable operations have been done such as excising the bump over the heel for comfort and removing slices of the fat of the leg for appearance. This syndrome is present also in Bazin's disease, which is probably a form of this disease severe enough to produce ischæmic ulcers, just as in severe Raynaud's disease ulcers occur on the fingers. The association of tuberculous manifestations in other parts of the body does not mean that the ulcers of Bazin's disease are tuberculous, and the fact that the ulcers heal in the summer and recur in the winter is against such an origin. In old cases of infantile paralysis the same syndrome is constantly present in the affected leg, and ulcers are very common. The ulcers in both diseases appear on the posterior surface of the lower half of the leg where the coldness and swelling are most marked.

*Pneumatic hammer disease* is a form of Raynaud's disease affecting the left hand in right-handed and the right hand in left-handed labourers working on road excavations and the like. Gangrene never occurs but there is a good deal of pain and disability.

* Lecture delivered at a post-graduate course at St. Mary's Hospital.

*Cervical ribs* occasionally press upon a vasomotor nerve coming up from the first or second dorsal ganglion to join the first dorsal nerve. The index is the finger most affected and often gangrene ensues. Treatment consists in removing the offending rib.

*Crutch pressure* sometimes causes a similar train of symptoms.

*Sclerodactyly* is a sclerodermatous condition affecting the fingers and it is nearly always associated with symptoms of Raynaud's disease. The sympathetic seems to be responsible for so many skin functions by its vasomotor, pilomotor, sweat, and sebaceous secretomotor supply that it is reasonable to suppose that it is responsible in some way for the suppleness of the skin. Ganglionectomy is of great value in this disease and it should be done in the early stages.

### ORGANIC OBSTRUCTION OF THE ARTERIES

*Buerger's disease* or *endarteritis* or *thrombo-angiitis obliterans* is one of the greatest importance. Confined almost exclusively to men in the fourth and fifth decades, it occurs most commonly in Eshkinazi Jews and heavy smokers, and is an inflammatory disease affecting both arteries and veins. The legs are most affected.

The symptoms may be summarised as follows: (1) Claudication in calves or small muscles of the foot. The latter symptom is generally treated at first as due to pes planus. (2) Ulcers of toes, especially of the bed of the great toe-nail (ingrowing toe-nail). These ulcers give excruciating pain. (3) Superficial phlebitis occurs in half the cases. Microscopy of an excised vein makes the diagnosis certain because the pathology is so characteristic. (4) Postural colour changes in the feet, purple when dependent, white when elevated is the classical test. The angle from the horizontal at which the feet have a normal pink colour is the "angle of circulatory efficiency." These postural changes do not occur in Raynaud's disease. (5) Disappearance of the pulses at the ankle and even popliteal space is frequent. The wrist pulses may also disappear. Sometimes the ulnar pulse is hard to feel, and blockage of the ulnar artery can be inferred if after blanching the palms by clenching the fist the colour does not return when the radial is compressed. (6) Sudden gangrene of toes develops and is generally of the dry type and is due to thrombosis of vessels.

Various diagnostic tests are of value:—

1. Oscillometric readings are very useful. I use Pachon's instrument and frequently calibrate it on my own leg.
2. Skin temperatures are of great value, and it is quite accurate enough to do them with skin thermometers of simple type. The elaborate thermo-couple apparatus is not necessary.
3. Cohen's test is based on the increased rapidity of absorption of an intradermal saline weal in this condition.
4. Intradermal injection of 0·1 c.cm. of 1/1000 histamine (ergamine acid phosphate) does not produce the characteristic weal and flare when the circulation is inadequate.
5. Arteriography may be carried out.

Treatment is very difficult and calls for much judgment because the cases vary in severity and rapidity of progress and the disease often comes to a standstill. I would place first of all the elimination of apical abscesses or other foci. This is left out of most articles on treatment but I have had the most dramatic improvements in three cases by removing bad teeth. The patient must stop all smoking and discontinue the use of rye bread in all forms. He must wear the warmest and dryest of footwear with cork and felt insoles and rubber soles and even sheepskin boots. Careful powdering of feet and meticulous chiropody are required. Hot-water bottles and bed-socks and short extra eiderdown for the feet are useful at night, a foot muff should be worn at the desk and when motoring, and rest on the sofa whenever possible is essential.

Buerger's exercises are useful. The patient has three minutes with the feet at 60°, three minutes hanging down and five minutes horizontal with an infra-red lamp. Injections of Padutin also help, especially in cases of claudication. Starting with three injections of 2 c.cm. per day the dose is decreased after 14 days to one injection per day. The patient may give these himself as he would insulin if he had diabetes. Protein shock is sometimes of value and is best produced with typhoid H antigen which causes less discomfort than T.A.B. The use of hypertonic saline intravenously has been suggested by Silbert to lessen the viscosity of the blood: 300 c.cm. of 5 per cent. saline solution is given three times weekly for a monthly course.

The absence of the disease in the female has prompted the use of ovarian extracts.

As regards surgical treatment the value of lumbar sympathectomy is much disputed. It cannot open up vessels blocked with inflammatory products; it can only ensure that the collateral circulation does its best, but it is possible that the operation may thus stay the march of the disease in some cases. The benefit to be obtained from the operation can be gauged by temporarily paralysing the sympathetic with spinal anæsthesia or novocain injection of the lumbar ganglia. Brown's vasomotor index is the difference between the rise in skin and mouth temperature divided by rise in mouth temperature produced by protein fever. An index of more than 1·5 is said to justify sympathectomy.

Division or alcohol injection of the cutaneous nerve-supply may be required for painful ulcers. The pain of these ulcers is excruciating and they will often heal only when rendered anæsthetic and treated by strapping. Amputations of toes and extremity and alcohol injections of the lumbar ganglia are other surgical measures which may become necessary.

*Ergot gangrene* or St. Anthony's fire is probably akin to Buerger's disease.

*Traumatic endarteritis* seems to be the main cause of that puzzling disease known as traumatic œdema of the back of the hand, the *Handdrucködem* of German and Secretan's disease of French authors. This is a disease of great medico-legal importance—a crush of hand or foot results in cold, painful swollen hand which never seems to get well. A similar condition develops in the fingers from cat, dog, or human bites. Ganglionectomy may be of value in severe cases of *Handdrucködem*.

*Diabetic endarteritis* is an extremely important form of arterial disease. The maintenance of a fairly normal blood-sugar by insulin and diet must help to prevent the insidious development of this disease.

*Mönckeberg's disease* or *arterio-sclerosis obliterans* is the disease of the old. The media is the seat of fibrosis and calcification. The thickening of the media and its loss in elasticity narrows the arterial lumen, and then finally comes thrombosis in the narrowed vessel and gangrene supervenes. For these unhappy cases careful management as outlined in Buerger's disease is prescribed. Padutin may be injected. Alcohol by mouth is of great value in reducing claudication and ischæmic pain. The only surgical treatment suggested is amputation for gangrene and occasionally section of a nerve to a painful ulcer.

*Syphilitic arteritis* must always be borne in mind. It rarely affects the extremities, but a Wassermann

reaction should be part of the routine investigation of all cases of arterial disease, even Raynaud's disease, which when associated with paroxysmal hæmoglobinuria is said to have a syphilitic origin.

| — | Part affected. | Sex. | Age. | Vasomotor index. | Claudication. | Postural colour change | Ulcers and gangrene. | Arterial oscillations. | Ganglionectomy. |
|---|---|---|---|---|---|---|---|---|---|
| Raynaud .. | Fgrs. | F. | 20–40 | H. | 0 | 0 | + | H. | Good. |
| Acrocyanosis | Hands & fgrs. | F. | 15–40 | H. | 0 | 0 | 0 | H. | ,, |
| Pneumatic hammer disease | Right hand. | M. | 20–50 | H. | 0 | 0 | 0 | H. | Not necessary. |
| E.C.P.F. .. | Legs. | F. | 15–40 | H. | 0 | 0 | 0 | Md. | Good. |
| Bazin.. .. | ,, | F. | 15–40 | H. | 0 | 0 | + | Md. | ,, |
| Infantile paralysis | ,, | M. F. | 14–50 | Md. | 0 | 0 | + | L. | Moderate. |
| Sclerodactyly | Fgrs. | F. | 20–40 | Md. | 0 | 0 | + | H. | ,, |
| Buerger .. | Feet & toes. | M. | 20–50 | L. | + | + | + | L. | ,, |
| Secretan .. | Back of hand | M. | 20–50 | Md. | 0 | + | UO | H. | Good. |
| Mönckeberg | Feet. | M. | 60–80 | L. | + | + | + | L. | Not ind. |

Fgrs. = fingers; H. = high; Md. = medium; L. = low; Ind. = indicated; UO = ulcers occasionally; E.C.P.F. = erythrocyanosis crurum puellarum frigida.

The accompanying Table shows for purposes of comparison the principal features of the disorders I have described.

## ACETYLCHOLINE IN PARALYTIC ILEUS

By A. Lawrence Abel, M.S. Lond., F.R.C.S. Eng.

SURGEON TO THE PRINCESS BEATRICE HOSPITAL AND TO THE GORDON HOSPITAL FOR RECTAL DISEASES; ASSISTANT SURGEON TO THE CANCER HOSPITAL AND TO THE WOOLWICH MEMORIAL HOSPITAL

The manner in which a patient's intestinal peristalsis will be affected after an abdominal operation is one of the most important of the unknown factors which materially affect not only the comfort, but sometimes even the life, of the patient.

If, after operation, the intestinal mechanism could be surely restored to normal, if so-called gas pains could be abolished, if all abdominal distension could be eliminated, and paralytic ileus prevented, or invariably cured immediately it made its appearance—then a very great advance in abdominal surgery would have been made. Even after the administration of an anæsthetic and the performance of an extra-abdominal operation, but especially after an abdominal laparotomy, individual patients vary enormously with regard to their intestinal behaviour. I know of no more trying complication, from the patient's point of view, than gas pains, or of one which provides a more anxious time for the surgeon than a case of paralytic ileus—a complication which still confronts us in a most dramatic manner, not only in patients whose pathological states make its advent likely, but sometimes in the most unexpected cases.

As a result of my experiences with choline and acetylcholine for seven years I feel that in these drugs, which are biochemical substances normally present in the intestines and probably in all tissues, we have potent aids in combating intestinal irregularities. My thesis is as follows:—

(1) Acetylcholine is essential for intestinal peristalsis.

(2) Factors which produce paresis or paralysis of the intestine do so either by (*a*) a diminution of the intestinal content of acetylcholine or by (*b*) increasing the threshold of the nerve-impulse, thus rendering the normal quantity of acetylcholine insufficient.

(3) The administration of acetylcholine is, therefore, the correct treatment for these conditions.

### Factors Affecting Intestinal Peristalsis

#### (*a*) ANATOMICAL CONSIDERATIONS

The first neurone includes the nerve-cells in the vagal motor nuclei of the brain (nucleus ambiguus and nucleus dorsalis) and the axon or peripheral nerve-fibre to the intestinal wall. The second neurone is in the actual organ innervated, and constitutes Auerbach's plexus in the intestinal wall. That is to say, as far as the intestines are concerned, the parasympathetic fibres of the vagus (and in the lower part of the large intestine of the sacral parasympathetics) end in the intestinal wall. There these ends lie in close relationship to the dendrons of the Auerbach's cells. But there is a definite space between these two which we may call the *interneurone space*. The axons from Auerbach's cells end on the surface of the unstriped muscle-fibres.

Rendle Short [1] states that the cells of Auerbach's plexus are large isolated polygonal nerve-cells closely packed round with small ovoid cells. (These ovoid cells may be regarded as the terminations of the axons of Auerbach's cells.) He further states that these ovoid cells of the ganglia show myoneural junctions where they pass into direct continuity with the unstriped muscle-fibres. Sharpey-Schafer [2] states that "the amyelinated fibres (of the parasympathetic) end in ganglionated plexuses in the wall of the intestine—i.e., a primary plexus, with ganglion cells in abundance. From these cells fibres pass to form secondary plexuses and ultimately end in ramifications among the contractile fibre cells to the surface of which the slightly enlarged ends of the branches are applied."

From the point of view of the interneurone space described, between the first upper and second lower neurone, these two accounts are quite different. By that I mean that one states that the fibres pass into direct continuity with, and the other that they are applied to the surface of, the muscle-fibre cells. The latter allows of a potential myoneural space.

An interneurone space is definitely known to exist. A myoneural space is at present a surmise. Both regions are of importance when we consider the effect of certain drugs, especially acetylcholine, upon the peristalsis of the intestines.

In considering, therefore, the vagal and sacral parasympathetic intestinal innervation we have:—

1. The upper neurone (vagus and sacral parasympathetic nerves).
2. The interneurone space (in the bowel wall).
3. The lower neurone (Auerbach's plexus).
4. Possibly a myoneural space.
5. The unstriped muscle-fibres.

Given these histo-anatomical details, a number of questions arise. For example, is the space mentioned in No. 2 and No. 4 above really a space, or is it a connecting link? We know that No. 2 is a link because impulses pass from 1 to 3. Is this link chemical or physical? Apparently it is not physical, for histological methods have failed to reveal it. Is this chemical link then, an acetylcholine-like substance as Samson Wright [3] suggests? Or is it a substance which we may call acetylcholinogen; or is it simply that acetylcholine, or choline with acetic acid, must be present for Auerbach's plexus to function? Or does acetylcholine itself, or an acetylcholine-like substance translate impulses from Auerbach's ovoid nerve bodies to the muscle-fibres?

#### (*b*) PHYSIOLOGICAL CONSIDERATIONS

Normal peristalsis is due to coördinated reflex actions between the neurones which take part in the lower system (Auerbach's plexus). It is independent

of the upper neurone, as is shown by the fact that it continues after section of the vagus. There must therefore be some stimulus other than a central one. The centres for the reflex arc are situated in the ganglion cells of Auerbach's plexus.

Langley [4] states that the enteric nervous system differs from the parasympathetic nervous system proper because the cells of the former (i.e., Auerbach's plexus) possess reflex and automatic functions which other peripheral nerve-cells do not possess. It is upon this property that the myenteric reflexes depend—that is to say, the relaxation of the gut below the point of stimulation, and contraction above, which process travelling along the circular muscle-fibre as a wave constitutes peristalsis. This movement is abolished by cocaine or nicotine. The control of the circular muscle coat is vested in Auerbach's plexus, and its action is abolished by cocaine or nicotine. The control of the longitudinal muscle coat (which produces the "pendulum" movements of the intestine) is said to be myogenic, and is propagated from one muscle-fibre to another. This movement is not abolished by cocaine or nicotine.

Complete normal peristalsis is maintained by a number of factors, including: (1) the presence of food in the gut; (2) impulses from the upper part of the alimentary canal (i.e., the ingestion of food); (3) products produced during the course of digestion, for example, amino-acids. These factors are sufficiently well known not to need emphasising here.

(4) Bile (in the large intestine only).

There seems to be considerable evidence to support the view that it is not the bile salts, as such, which stimulate peristalsis in the large intestine, but that bile is decomposed into glycerol, phosphoric acid, and choline, and keeps a constant quantity of the latter always available for the formation of acetylcholine, and the maintenance therefore of normal peristalsis.

(5) Autonomic nerve-supply. A normal proportion between sympathetic and parasympathetic stimulation of the organism as a whole; that is to say, the correct proportion of rest on the one hand, and of work and worry on the other hand, in an ordinary day.

In addition to parasympathetic nerve-supply the whole alimentary canal is also supplied by sympathetic fibres, stimulation of which produces exactly the opposite effect to stimulation of the parasympathetic nerves. Peristalsis is inhibited, and the sphincters remain contracted. In the course of a normal physiological day the action of neither the sympathetic nor the parasympathetic can be said to be predominant. Over-stimulation of the sympathetic portion, for example, by worry, grief, or mortal combat, results in an inhibition of peristalsis, and stagnation occurs in some or all sections of the alimentary canal.

(6) Balance of water, chlorides, and carbohydrates in general metabolism. This large subject does not come within the scope of this paper.

(7) Presence of acetylcholine in normal bowel. It would appear from a large number of experiments that acetylcholine must be present in the wall of the alimentary canal, in order that impulses from the vagus or from Auerbach's plexus may affect the muscle-fibres. That is to say, it appears that the maintenance of peristalsis of the intestine depends finally upon acetylcholine being present in the wall of the alimentary canal.

The therapeutic effect of choline upon the intestine was pointed out in this country by Wolf and Canney [5] in 1926, when they drew attention to their own results in the treatment of ileus by choline. Insufficient attention appears to have been paid to this important article, to which I have freely referred in citing experiments. The point has been investigated by the following workers:—

Weiland [6] in 1912 observed that when a piece of intestine was allowed to contract in Ringer's solution for some time, the fluid acquired the property of exciting contraction in other pieces of intestine placed in it. The substance causing this effect was isolated as choline.

Further experiments illustrating the physiology of acetylcholine may be quoted from Samson Wright.[7] Repeated stimulation of a frog's heart containing Ringer's solution produces a chemical substance in the ventricle which will inhibit another heart. The same solution will stimulate contraction of a stomach or pieces of intestine. A similar body can be extracted from a frog's heart muscle; if this has been previously subject to vagal stimulation the yield is markedly increased. The same is true of mammalian heart muscle. This substance is called "vagus substance," and is very active but very unstable, and closely resembles, or may be identical with, acetylcholine. At any rate on hydrolysis it becomes choline.

Both Reid Hunt [8] and Dale [9] have shown how much more powerful an agent acetylcholine is than choline.

Klee and Grossmann [10] found that after treating decerebrate cats with choline, stimulation of the sympathetic failed to produce inhibition of the stomach movements, and they reported good results in patients suffering from chronic atony of the stomach and intestines, and in constipation. Since their experiments were carried out it has been shown, as stated above, that choline unites in the intestinal wall with acetic esters, and produces acetylcholine, and that the results are due to the action of the acetyl derivative of choline.

It can therefore be said that the effect of acetylcholine simulates the action of the parasympathetics upon the intestine. But it does more than this, for it still acts upon the intestine when this is entirely cut off from vagus and splanchnic nerves.

*Chronaxie time of muscle.*—Another factor which has to be considered is the chronaxie time of the muscle-fibres of the intestinal wall. By the chronaxie time of a muscle is meant the minimum time taken for double the minimum effective stimulus to produce a contraction. It is known that a nerve has a minimum time for an effective stimulus and that this does not alter. Muscle-fibres, on the other hand, have a variable chronaxie time. It would appear probable that under pathological conditions the chronaxie time of muscles is lengthened. It is definitely known that the chronaxie time of muscles is shortened by adrenaline and lengthened by atropin. This is especially true in abnormally tired muscles. It is almost certain that acetylcholine affects the chronaxie time of muscle, and a recent French paper [11] maintains that acetylcholine acts by shortening the chronaxie time of the paretic muscles, which has been lengthened by fatigue and also presumably by the factors producing paresis. It therefore appears certain that not only is acetylcholine essential for the transmission of the peristaltic impulse, but that the muscle-fibres themselves contract more readily and more quickly in the presence of acetylcholine.

*Acetylcholinæmia.*—Considerable work has been done on the subject of the presence of acetylcholine in the blood. Dale doubts the presence of acetylcholine in the blood, but Kapfhammer and Bischoff [12] maintain that it is present. Page and Schmidt [13] say it is present in the serum, spleen, and liver, but whether it is in the form of lecithin or actually as acetylcholine in the two latter, is doubtful. Dale suggests that acetylcholine is present in the blood corpuscles. Some workers have found as much as 28 g. of acetylcholine in each litre of blood. If this is true, why should such a small therapeutic dose affect the patient? Dale believes that the corpuscles are broken down by the liver and spleen, in fact by the whole reticulo-endothelial system and give rise to cholesterol and lecithin in the bile. There is, however, no evidence of choline as such in the bile, but bile does contain lecithin, which we know is made up of glycerol plus phosphoric acid plus choline. There is said to be a "mass action balance" between choline and acetylcholine throughout the organism.

The sequence of events in normal peristalsis is probably, therefore, as follows: choline is present in the intestinal wall and the effect of the nerve impulse is to cause a linking of the choline with salts of acetic acid to form the choline ester—i.e., acetylcholine.

The acetylcholine is the connecting chemical link bridging the space between the lower motor neuron and the muscle-fibre, or it is possible that the acetylcholine itself produces the peristaltic effect.

(*c*) PATHOLOGICAL CONSIDERATIONS

*Acetylcholine in abnormal bowel.*—Certain abnormal conditions which produce paresis or paralysis of the peristaltic mechanism are associated with a relative or absolute diminution in the acetylcholine content of the bowel wall and are relieved by the administration of this substance. The experimental evidence is as follows :—

Experiments performed by workers in Magnus's laboratory in Utrecht showed that paralysis of the bowel in animals was produced by prolonged administration of chloroform. This paralysis was quickly relieved by the injection of choline hydrochloride. Strong gastro-intestinal movements occurred almost immediately. Magnus concluded that choline acts as the hormone of intestinal movement.[14]

Arai [15] produced peritonitis in cats by intraperitoneal injections of iodine, thus giving rise to any required degree of ileus, depending upon the dose of iodine. This paralysis was overcome by injections of choline. Similarly, typical post-operative ileus was produced by exposure to air and manipulation of the intestines of an animal, and no evacuation occurred for 30 hours unless choline was administered ; when this was done, a normal stool followed very shortly. Again, Arai, using intraperitoneal injections of *Bacillus coli*, united with staphylococci, was able to produce a severe peritonitis in cats, accompanied by intestinal paralysis ; injections of choline cured the ileus. He analysed the intestinal wall in control cases and found that a normal content of choline was present, and concluded that the paralysis resulted from a lessened sensitivity of Auerbach's plexus. It was only when the blood choline was raised above the normal that the nerve plexus responded, giving rise to increased tonus and increased peristalsis.

Further experiments tend to show that stimulation of a posterior nerve-root (i.e., sensory stimulation) causes the liberation of acetylcholine peripherally. For example : (1) if a motor nerve to tongue or limb is divided and allowed to degenerate, an injection of acetylcholine causes a slow contraction of voluntary muscle ; (2) stimulation of the chord tympani produces a contraction of the denervated tongue ; (3) stimulation of the peripheral end of the posterior nerve-root produces contraction of the denervated muscles of a hind limb. That is to say, both acetylcholine and posterior root stimulation produce the same effect in the hind limb, namely, vasodilatation and a slow contraction of the denervated muscle.

*Relationship to Histamine.*—Further experiments have shown that histamine is responsible for the liberation of acetylcholine.

It will be remembered that histamine produces a condition of shock, and is one of the main factors in the production of surgical shock, whether due to accidental injury or to operation. Histamine in man produces dilatation of the arterioles and paralysis of the capillaries. This leads to a fall of blood pressure, because of the failure in venous return. Histamine also increases the permeability of capillaries and allows fluid to escape into the tissue spaces. The volume of the circulating fluid is therefore reduced, and its viscosity increased. It has been shown that chloroform and ether sensitise the capillaries to the action of histamine, whereas no such effect is produced by nitrous oxide. To produce an equivalent fall of blood pressure in a non-anæsthetised patient, or in one anæsthetised solely with nitrous oxide, ten times as much histamine is required as is necessary in a patient anæsthetised by either chloroform or ether. This has a very definite bearing upon the question of the choice of an anæsthetic and its relation to the production of shock, and the degree of shock produced, and to the complications which are likely to occur after an operation, if the viscosity of the blood is increased.

When skin is injured, histamine is liberated. It is probable that when *any* structure is injured, histamine is liberated. Histamine in the tissues stimulates the sensory nerve-endings, and sends impulses along the axon via the posterior nerve-roots, stimulation of which, we have already seen, causes liberation of acetylcholine around the arterioles. Hence Lewis's statement that "nerves produce their effect through the intermediary of *chemical agencies*." For example, if the glowing head of a match is allowed to rest on the skin there is produced, apart from a burn, (1) local liberation of histamine ; (2) stimulation of afferent nerve-fibres ; (3) stimulation of the posterior nerve-root, giving rise to (4) efferent impulse back along the "afferent" nerve, causing (5) liberation of acetylcholine in the region of the original burn, but over a wider area ; (6) dilatation of local arterioles, with resulting (7) blush (flare) over a wider area than the original lesion (axon reflex).

Any operation undoubtedly results in the local production of histamine, which in turn liberates acetylcholine in the tissues where it is then destroyed. The mere performance of a laparotomy, therefore, depletes the acetylcholine content of the bowel wall. The greater the trauma the more acetylcholine is katabolised and the more prone does the patient become to develop ileus. This liability is diminished by nine-tenths by avoidance of chloroform or ether. As far as surgical shock is a factor, the degree of ileus produced depends upon the relative lack of acetylcholine in the intestinal wall. Arai's experiments show that other factors (e.g., peritonitis) still further tend to increase the condition of ileus by diminishing the sensitivity of Auerbach's plexus. A larger concentration of acetylcholine is therefore required to produce peristalsis.

USE OF ACETYLCHOLINE IN PARESIS AND PARALYSIS OF THE INTESTINE

It is outside the scope of this paper to discuss other factors concerned in the production of ileus or to detail the many other methods which are in use for this condition. I have used acetylcholine, often in the most dramatic manner, when all other methods have failed to produce the desired effect. For a moderately severe case, where the complete absence of the passage of flatus or fæces after the first 48–72 hours following a laparotomy indicates paresis or paralysis of the intestine, I give 0·1 g. of acetylcholine by intramuscular injection every two or three hours until flatus or fæces are passed. This usually occurs after the second or third dose. In a more serious case, where complete obstruction has been present for five or six days, I give 0·1 g. at hourly intervals for six doses. For an extremely desperate case I have given 0·6 g. at a single dose with most satisfactory results.

If these measures entirely fail recourse should be had to the performance of an ileostomy or an ileo-ileostomy, but I have not known this necessary since using acetylcholine. Apart from cases which I have operated on myself, most of the cases of paralytic ileus which I have seen have had large quantities of pituitrin, eserine, and morphia, and I avoid these drugs entirely.

## Case Histories

The following are illustrative cases.

ILEUS DUE TO PERITONITIS

CASE 1.—Male, aged 8 years. Sent to me by Dr. L. Scher. Three days' history of acute appendicitis. Operation : Oct 2nd, 1931. Gangrenous appendix removed under gas-and-oxygen. Pus from pelvis to just above umbilicus. Free drainage established. Twenty-four hours later abdomen became much distended. Turpentine enema and hot stupes given with no result. Twenty-four hours later the patient began vomiting. Ox-gall enema was given with a small constipated result, but no flatus was passed, and abdomen became rapidly more distended. At 4 P.M. on the second day after the operation 0·05 g. acetylcholine injected intramuscularly every hour for four doses. The bowels were well open about midnight

and three times during the night, and the patient made an uninterrupted recovery.

CASE 2.—Male, aged 15 years. Acute appendicitis with lower abdominal peritonitis. Operation: June 13th, 1928. On 14th: condition satisfactory. 15th: patient vomited twice. Abdominal pain and distension marked. Turpentine enema given with small constipated result. 16th: distension worse. Turpentine stupes applied two-hourly: no result. 17th: Turpentine enema: no result. 0·5 c.cm. pituitrin given, followed by olive oil enema: slight result. Vomited twice. 18th: still some abdominal pain, abdomen becoming more distended, patient vomiting all day. 0·5 c.cm. pituitrin given, and rectal wash-out: slight result. 19th: condition much worse. Gastric lavage and simple enema, with very poor result. I first saw this case at the request of my colleague who had operated at 9 P.M. on this day, and ordered 0·1 g. of choline hydrochloride hourly for six doses. The last dose was given at 3 A.M. on 20th; patient's bowels moved without enema at 5 A.M., and again four times during the morning. All vomiting ceased. Thereafter patient gave no further cause for anxiety, and made an uninterrupted recovery.

**This case showed the rapid benefit of choline when given even after ileus had been established for six days.**

CASE 3.—Male, aged 50. I was called in consultation to this patient by Mr. Jocelyn Swan and Dr. H. Morrison. Had had a gangrenous appendix removed 14 days before with some local peritonitis. Five days later he began to vomit, and the abdomen was reopened, and drainage-tubes reinserted. No real action of the bowels had taken place since the first operation. Repeated enema had been returned with coloured result only, and he had been persistently vomiting for nine days. When I saw him August 22nd, 1932, the patient was moribund, with enormous distension of the abdomen, and had apparently only a few hours to live. For several days he had had repeated intravenous injections of normal saline and glucose, with pituitrin and eserine. General treatment: 1000 c.cm. normal saline with 2½ per cent. glucose; coramine, one ampoule hourly for four hours, two-hourly for two days. Local treatment: gastric lavage with normal saline; six gallons were needed before this patient's gastric wash-out was returned clear. Ox-gall enema, 1 oz. ox-gall to 5 oz. of water. Acetylcholine, 0·1 g. hourly for six doses. Antigas gangrene serum subcutaneously, 80 c.cm. After the fourth injection of acetylcholine, this patient had a copious action of the bowels, and within 12 hours the abdomen was quite soft and scaphoid. The bowels were well open night and morning for the following four days, and the patient was apparently perfectly well during this time. I am informed that he then developed signs of a subphrenic abscess, began to cough up a little pus, and two days later died. At no time after the exhibition of acetylcholine did he have any distension or vomiting.

CASE 4.—Female, aged 31. I was called in consultation to see this patient on July 22nd, 1932, by Dr. W. H. Passmore and Dr. J. M. Tait. An acute appendix had been removed eight days previously, and a drainage-tube left in situ for six days. Twenty-four hours before I saw the patient the pulse had gone up to 120, there was absolute constipation and fæcal vomiting, in spite of enemata and the administration of pituitrin and eserine. When I saw her the pulse-rate was 158, temperature 99° F.; the abdomen was extremely distended, with no perceptible intestinal movement. A large mass was palpable in the left iliac fossa—possibly abscess, possibly collapsed intestine. Patient in extremis. Treatment: 1000 c.cm. of normal saline intravenously; 0·1 g. acetylcholine two-hourly for three doses; hot turpentine stupes to the abdomen; turpentine enema. Within six hours the bowels had moved three times, and within eight hours all danger appeared to have been passed, and the mass in the left iliac fossa had disappeared. Next day the patient was perfectly well, bowels opened naturally twice, and the following day the patient was up and walking about, and made an uninterrupted recovery.

**This case is typical of at least a score of cases which I have seen in the last three or four years, and which appeared at first to be within a few hours of death, and which have made an uninterrupted recovery, after the use of acetylcholine.**

CASE 5.—Male, aged 32. Five days' history of appendicitis, with two days' history of general peritonitis. Admitted to hospital: April 29th, 1931. Immediate operation revealed ruptured gangrenous appendix with general peritonitis. Three days after operation abdomen became much distended, and the distension increased in spite of three enemata which had no result. Pulse-rate rose to 120. Patient very seriously ill: 0·1 g. acetylcholine given six-hourly for four doses; bowels well open, and subsequent recovery uneventful.

### GENERAL PERITONITIS WITHOUT ILEUS

CASE 6.—Male, aged 24. Acute appendicitis history four days. General peritonitis 48 hours. A very similar case to preceding one, with almost complete general peritonitis, distended and congested intestines. Operation: June 6th, 1932. Appendicectomy and three drainage-tubes. No fluids given by mouth, but interrupted rectal salines given for 36 hours, when acetylcholine was given in doses of 0·1 g. six-hourly. After the second injection the rectal saline began to be returned with a large quantity of flatus and some fæces. After the fourth injection of acetylcholine an enormous rectal result occurred, and the patient then gave no further cause for anxiety, the bowels being quite regular thereafter without further aperient or treatment.

**This case is typical of many others in whom all the factors likely to produce paralytic ileus were present and in whom acetylcholine has been used and normal bowel function has followed.**

### ILEUS FOLLOWING NON-INFECTED LAPAROTOMY

CASE 7.—Male, aged 24 years. Operation for left inguinal hernia and undescended testicle on the morning of July 5th, 1928. On 6th, condition satisfactory. On 7th, complained of great abdominal pain and distension. Turpentine enema given—no result. I first saw this case, at the request of my colleague, Mr. Barrington-Ward, who had operated, in the afternoon when absolute constipation had been present for 56 hours and patient was rapidly becoming very seriously ill. I ordered 0·1 g. choline every four hours for three doses. Last dose was given at 5 A.M. on 8th. Bowels were well open three times during the morning, and patient made an uninterrupted recovery.

CASE 8.—Female, aged 60 years. Operation: Sept. 16th, 1929. Resection anastomosis of transverse colon for malignant disease. No cæcostomy. On 17th: abdomen very distended. Glycerin enema with coloured result and some flatus. On 18th: abdomen very distended. 0·5 c.cm. pituitrin 6 P.M., 0·5 c.cm. pituitrin 10 P.M. No result. Frequent vomiting. Large fomentations to abdomen. Glycerin enema: coloured result and some flatus. Abdomen still very distended. On 19th: frequent vomiting. Eserine gr. 1/120 at 1.40 P.M. Treacle enema: small result. On 20th: abdomen very distended. Fomentations still continued. Eserine gr. 1/120 at 11.45 A.M. Still vomiting. Bowels not opened. On 21st: abdomen still very distended. Eserine gr. 1/120 at 3 A.M. No result. At noon I was asked to see this case by my colleague, Mr. Twistington Higgins, who had operated. The patient had extremely advanced paralytic ileus and was in extremis. I ordered 0·1 g. choline every three hours for three doses. The last dose was given at 5.15 P.M. Patient had her bowels open twice during the night and three times the next day. Vomiting stopped, and by 6 A.M. on 23rd abdomen was quite soft and patient made an uninterrupted recovery.

CASE 9.—Female, aged 49. I performed an abdomino-perineal excision of the rectum at the request of Dr. E. V. Dunkley, on Sept. 11th, 1929. After five days of satisfactory progress patient began to vomit, and had a complete cessation of the passage of flatus and fæces via the colostomy. The abdomen became distended, and the pulse began to rise. No result from a turpentine enema in the colostomy. Treatment: gastric lavage and intramuscular injections 0·1 g. acetylcholine every two hours for four doses. After the third dose copious evacua-

tion of flatus and fæces, followed by three days' normal progress, when similar symptoms reappeared. Two doses of acetylcholine were administered, with similar satisfactory results, and thereafter patient made an uninterrupted recovery.

### SPASMODIC STENOSIS OF BOWEL

Acetylcholine is also efficacious in relieving spasmodic stenosis of the intestine. The following case is typical of several similar cases treated by this substance:

CASE 10.—Female, aged 15½ years. Operated on for perforated appendix (Nov. 3rd, 1928) with abscess and drainage. Made a normal recovery. Patient readmitted to hospital, Feb. 28th, 1929, with 24 hours' history of colicky abdominal pain, frequent vomiting, and absolute constipation. Temperature, pulse, and respiration normal. Abdomen distended. No other abnormal physical signs detected. Three enemata were administered with no resulting action of the bowels. Twelve hours after admission she was given 0·2 g. of acetylcholine at two-hourly intervals for three doses. The bowels moved twice in the next 12 hours, and the patient had no further alimentary abnormality, and has remained quite well ever since. Subsequent X ray examination failed to reveal any intestinal abnormality.

Had I not known of acetylcholine I should certainly have operated upon this child when the enemata failed to act. In previous similar cases of post-operative adhesions causing acute obstruction, I have frequently found that the obstruction was due to one or very few adhesions causing a spasm of the bowel at the site of adhesion without any actual organic stenosis, and it has always seemed to me that if that spasm could have been overcome for a time long enough for the adhesion or adhesions to be absorbed, no operation would have been necessary.

The acetylcholine in this case would appear to have restored the normal tone of the bowel, to have relieved the spasm, and to have rendered operation unnecessary in this case as it has done in several subsequent cases of a similar nature.

I would, however, not advise its use in this type of case unless the patient is under expert observation in an institution within a few minutes' reach of the operating table, as I feel it is sometimes impossible to differentiate between an organic stenosis and a functional spasm, except that acetylcholine will leave the one unaffected and will relieve the other.

CASE 11.—Female, aged 56. Seen first on April 13th, 1932, in consultation with Dr. L. Scher. Three days' history of absolute constipation and fæculent vomiting. Scar of old appendicectomy with marked distension of abdomen, and marked visible peristalsis. Had had three enemata without result. Treatment: 0·1 g. acetylcholine every hour for four doses, when she passed flatus and fæces freely, and made an uninterrupted recovery.

### ACUTE CONSTIPATION

CASE 12.—Male, aged 29 years. Admitted to hospital on Oct. 5th, 1929, as a case of acute intestinal obstruction. There had been absolute constipation for five days. Two enemata given at home had produced no result. There was no vomiting. On admission there were no abnormal physical signs whatever. Three doses of 0·1 g. acetylcholine were injected at six-hourly intervals, and no further treatment was given. The bowels moved slightly after the second injection and several times after the third injection. Since then his bowels have been regular, and a complete X ray examination of his alimentary tract failed to reveal any abnormality. He has been perfectly well ever since, and his doctor informs me that his previous chronic constipation is quite cured.

CASE 13.—Male, aged 21 years. Sent to me by Dr. J Paxton. Absolute constipation since March 28th, 1930' 29th: mist. alba. ℥i t.d.s. 31st: calomel grs. 5, mist. alba. ℥i t.d.s. April 1st: calomel grs. 5, castor oil ℥i, mist. alba. ℥i t.d.s., and two enemata. 2nd: croton oil ♏ ii, mist. alba. three times a day, liquid paraffin ℥i three-hourly, and two enemata. 3rd: one enema, mist. alba. t.d.s., liquid paraffin as before. I saw this patient on April 4th, with no abnormal physical signs whatever. Treatment: 0·1 g. acetylcholine every two hours for three doses. This was followed by three actions of the bowels which have been perfectly regular since. Subsequent X ray examination failed to reveal any abnormality in the alimentary canal.

CASE 14.—Female, aged 24 years. Seen in consultation with Dr. M. Ravell, Jan. 4th, 1933. History of complete constipation for ten days. During the day had had three vomits, very offensive and semi-fæculent. Large doses of aperients had been given during the preceding three days. Upper abdominal pain and slight distension for 24 hours. No abnormal physical signs detected on clinical examination. I suggested injecting 0·1 g. of acetylcholine every four hours until the bowels began to move. This happened after the second injection, and the patient had three satisfactory actions in the following 12 hours, and has since been perfectly well.

CASE 15.—Male, aged 49. Admitted May 28th, 1931. Two days' history of severe colicky pain in left loin, with absolute constipation. Olive oil and turpentine enemata given without result. On admission distended and tympanitic abdomen. Tenderness over descending colon. No other abnormal signs. Treatment: 0·1 g. acetylcholine hourly for three doses. Immediately after third dose began to pass flatus freely, bowels were well open, and all symptoms disappeared. Five days later X ray examination failed to reveal any abnormality.

CASE 16.—Male, aged 20. Admitted to hospital on May 16th, 1931. Appendicectomy had been performed six months previously. For 24 hours patient had had colicky abdominal pains with vomiting for 12 hours. Clinical examination showed considerable midline distensions with visible peristalsis. X ray examination showed two loops of distended small intestine. In spite of our faith in acetylcholine this patient appeared to need urgent laparotomy for a small gut obstruction. He was given 0·2 g. acetylcholine immediately his clinical examination had been completed, and a similar dose one hour later, just before being put upon the table. On opening his abdomen the site of obstruction was easily seen, and the two ends of a small adhesion which had been causing the obstruction, and which had recently broken, were found. A small fresh clot of blood showed on each torn end. Nothing was done and the patient made an uninterrupted recovery.

### ILEUS FOLLOWING OBSTETRIC MANIPULATIONS

CASE 17.—Primipara, aged 27. Difficult delivery of stillborn child Nov. 28th, 1930. On the evening of the 29th abdomen became distended and pulse-rate increased slightly. Visible peristalsis noted. 30th: pituitrin and eserine given in the morning. No result. Pulse-rate increased to 140, temperature 99. Persistent hiccough. High enema given with little flatus result. Dec. 1st: 6 P.M., olive oil enema: no result. Ten P.M. turpentine enema: no result. On the morning of Dec. 2nd I was called in consultation by Dr. J. K. Donald, at which time there had been no bowel movement since Nov. 27th—five days. Patient was then given 0·1 g. acetylcholine hourly for six hours, together with an ox-gall enema, ½ oz. in 4 oz. of water, immediately followed by profuse bowel action. By the morning of Dec. 3rd the abdomen was normal, and thereafter her bowels normally opened.

CASE 18.—I am indebted to my colleague, Dr. Gladys Hill, for permission to publish the following case. Primipara, aged 35. Classical upper segment Cæsarean section early in labour for disproportion. Stovaine spinal anæsthesia with gas-and-oxygen. Operation 10 A.M. Two days later patient's abdomen distended, not relieved by turpentine enema. Three days after operation still distended. No relief from simple enema. Three doses of acetylcholine 0·1 g. given at hourly intervals, with spontaneous action of bowels after third dose. Complete relief of distension and remainder of puerperium uneventful and afebrile.

### GENITO-URINARY SURGERY

CASE 19.—Male, aged 65 years. Prostatectomy five days before my opinion was asked. Complete intestinal

obstruction (paralytic in type). Not responding to large doses of pituitrin and eserine. Bowels open copiously after first dose of 0·1 g. acetylcholine; two subsequent doses: an uninterrupted recovery.

### Conclusions

In some fifty apparently normal post-laparotomies I have used acetylcholine as a routine, starting with 0·1 g. 36 hours after the operation, and repeating this dose every six hours until flatus or fæces are passed without enemata. This usually happens, as indeed it does in many entirely untreated cases, in from six to twelve hours, but as many of these cases had severe general peritonitis my impression has been that their post-operative course has given rise to less anxiety than it would have done without the acetylcholine. But I feel that many more cases must yet be treated before advising acetylcholine as a routine in the post-operative treatment of every laparotomy.

Several cases have been seen in which doubt existed as to whether the condition present was due to mechanical or paralytic obstruction. I have made it a practice to give these patients 0·1 g. of acetylcholine hourly for six doses. Many unnecessary operations have been avoided and no untoward effects produced in organic obstruction cases.

Most patients with severe post-operative distension, gas pains, and paresis of the bowels are considerably improved by the administration of acetylcholine by intramuscular injection. In paralytic ileus acetylcholine appears to be almost specific in curing the condition.

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## ATYPICAL TERATOMA AND SPHEROIDAL-CELLED CARCINOMA OF ONE GERMINAL GLAND

### ASSOCIATED WITH EUNUCHOIDISM, IN AN APPARENT FEMALE


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THE following case is of interest partly because of the rarity of eunuchoidism in the female and partly because of the nature of the tumour found.

#### HISTORY

A. B. came under observation in February, 1932, at the age of 24½ years. Up to the age of 8 she was apparently a normal healthy female child. She had whooping-cough, croup, diphtheria, and several attacks of pneumonia. When 8 years old she was admitted to the London Hospital with a history of several months' abdominal pain, loss of appetite, wasting, pallor, and apathy. Dullness and diminished breath sounds were found at the base of the right lung, the abdomen was moderately enlarged, tense, and tender, and a diagnosis of tuberculous peritonitis and enlargement of mediastinal glands was made. During the next four years her abdomen was frequently painful and sometimes enlarged, hard, and tender to the touch. Then, at the age of 13, she had a sudden attack of severe lower abdominal pain with vomiting; the pain became right-sided, a tender mass was felt per rectum on the right side, and she was operated on. A right ovarian tumour twisted on its pedicle was found and removed, and a scarred appendix was also removed. There is no record of the appearance of the remaining pelvic organs. She made a good recovery, and after the operation her chronic abdominal symptoms completely disappeared.

FIG. 1.—Photograph of the patient.

From that time onwards her general health remained excellent, but her development was abnormal. As a child she had been smaller than the average and thin. At 16 she began to grow rapidly and soon weighed more than 9 stone. She never menstruated. Her breasts remained quite flat until she was 23. Scanty hair appeared on the pubes, none in the armpits. Her hands, feet, and head became abnormally large, and her feet, judging by an increase in the size of her shoes from 6 to 8, continued to grow between the ages of 20 and 24. From the age of 16 she complained of hot flushes, during which she felt very hot and breathless for a minute or so and her friends noticed flushing of her face. These uncomfortable attacks became more frequent until they occurred several times every day. She also complained of intermittent aching sensations in the thighs, ankles, sterno-clavicular regions, and elsewhere in the limbs; she was inclined to be thirsty, drinking water frequently between meals and half to one pint at night.

At the age of 20 she married a man she had known and been friendly with for six years; she was always fond of him; sexual intercourse took place infrequently and was very distasteful to her.

#### EXAMINATION

On *physical examination* she was found to be a healthy looking subject, 5 ft. 7¼ in. in height and 10 st. 8 lb. in weight, with the external appearances shown in Fig. 1. The head was abnormally large, especially the facial part of it; the nose was rather broad and thick, the lower jaw large. The arms and

legs were disproportionately long. The hands were large, but the fingers were of normal shape, neither tapering nor thickened. There was a slight degree of genu valgum on the left side. The feet were large and unusually broad across the heads of the metatarsals. The ankles could be dorsiflexed only to a right angle. The skin was smooth and of normal colour and texture. Hair was abundant on the head, normal on the eyebrows, practically absent from the axillæ and scanty on the pubes. The teeth were well developed and sound, with no spacing. There was a moderate amount of subcutaneous fat, of a distribution not typically feminine but resembling the feminine type much more than the masculine. The breasts were small and no glandular tissue could be felt in them. The nipples were poorly developed. In the rest of the routine physical examination no significant abnormal signs were found.

The *genitals and pelvic organs* were examined by Mr. R. A. Brews under general anæsthesia. The pubic hair was of female distribution, very scanty and not more than would be expected six months after puberty. The mons was normal. The labia majora and minora were underdeveloped. The clitoris was small. The vagina was of normal size and length. The cervix was small, like that of a childless woman after the menopause. The body of the uterus was very small, like that of a child of six, and very difficult to feel. No ovary could be felt on the right side of the pelvis, and nothing clinically resembling an ovary on the left side; there was, however, on the left side a small mobile nodule, not bigger than a haricot bean.

*X ray examination* (Dr. M. H. Jupe) showed a large thick skull, the sutures of which were not closed; the sella turcica was definitely larger than normal, even when allowance was made for the large size of the skull; its vertical diameter, measured on a direct sella film, was 12 mm. and its longest anteroposterior diameter 14 mm., while the inter-clinoid distance was 5 mm. The tips of the clinoid processes were not separated. The sphenoidal sinuses and the frontal sinuses were large; the pineal body was calcified. Incomplete union of epiphyses was seen in the upper end of the humerus, the lower ends of radius and ulna, the metacarpals, the phalanges of the hand, the lower end of the femur, the upper end of the tibia, and the iliac crest; the epiphyseal lines were most distinct in the bones of the wrist and hand (Fig. 2). Union was complete in the acetabulum, ischial spine, tuber ischii, anterior inferior iliac spine, ischio-pubic ramus, upper end of the femur, metatarsals, and phalanges of the foot. There was no "tufting" of the terminal phalanges of the fingers such as is seen in acromegaly.

The *visual fields* and the appearance of the *fundi* were normal. After the ingestion of 50 g. of glucose the *blood-sugar* (Folin and Wu's method) rose from a fasting level of 0·09 g. per 100 c.cm. to 0·121 at 30 mins., 0·148 at 70 mins., and 0·125 at 120 mins.—i.e., a normal response. The unrestricted fluid intake was 68½ oz. in 24 hours; the output, 58 oz.

FIG. 2.—Radiogram of the wrist showing incomplete union of epiphyses.

### PATHOLOGICAL REPORT ON THE TUMOUR

(By Prof. Hubert M. Turnbull)

*Naked-eye examination.*—The specimen removed at the operation in 1921 (S.D. 129/1921) was a rounded mass measuring 9 × 7 × 5 cm. Over one side passed a Fallopian tube (8 cm. long) with patent ostium abdominale. The outer surface was dull, and either light or dark red; a few tags of delicate fibrous tissue were attached to it. The cut surface was partly solid and partly cystic. The solid part was soft. It showed rounded, granular, pink and yellow grey nodules, which measured up to 2 cm. in diameter and were separated by smooth, purple, and red trabeculæ. The cystic portion measured 5 cm. in diameter. It was lined by a thin, bluish membrane, which was often raised by trabeculæ of a soft pink or deep red, hæmorrhagic, tissue containing smaller cysts.

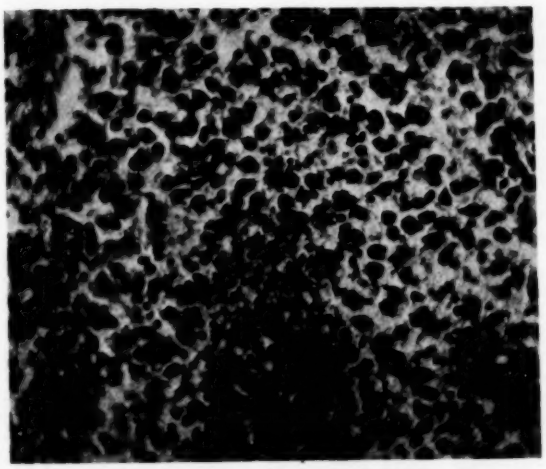

FIG. 3.—Spheroidal-celled carcinoma in upper part of tumour. Ehrlich's hæm. and eosin. (× 190.)

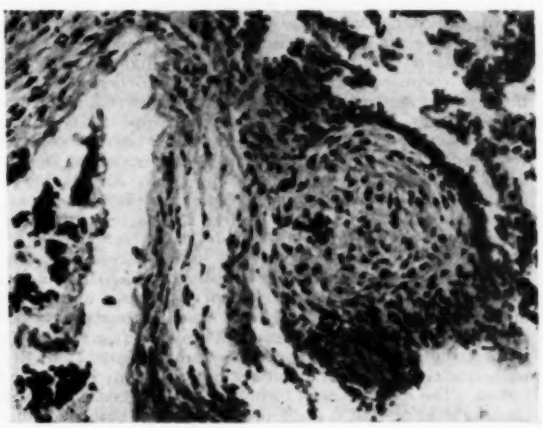

FIG. 4.—Nodule of cartilage and cyst lined with columnar epithelium in teratoid part of tumour. Ehrlich's hæm. and eosin. (× 150.) The group of dark cells upon the cartilage are red corpuscles displaced by the pressure of a diamond marker.

*Microscopic examination.*—A piece including the Fallopian tube and a piece from the opposite pole were taken. Both pieces extended from solid superficial tissue to cystic tissue. They were fixed in 4 per cent. saline formaldehyde and embedded in paraffin; sections were stained with Ehrlich's hæmatoxylin and eosin, Weigert's iron hæmatoxylin and van Gieson, Mallory's

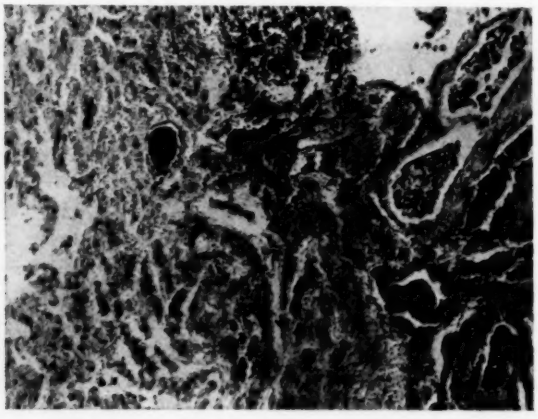

**FIG. 5.**—Cavernous tissue (on the left) merging into teratoid tissue (on the right) in deeper part of tumour. Weigert's iron hæm. and van Gieson. (×25.)

phosphotungstic acid hæmatoxylin, Wigert's fuchselin and neutral red, Verhoeff's stain for elastic tissue, Ehrlich's hæmatoxylin and mucicarmin, and silver according to Laidlaw's collagen-reticulum method.

The peritoneum of the broad ligament, a little adipose tissue beneath the peritoneum and, in one block, a Fallopian tube of normal structure occupy the surface of the sections. They are hæmorrhagic, but their structure is easily recognised. Beneath them lies solid tissue which is extremely hæmorrhagic, extensively necrosed and greatly infiltrated with neutrophil leucocytes. It contains numerous veins distended with blood and has a stroma of stout, wavy, collagen fibres, and delicate reticulum fibres. Elastic fibres are seen only in the walls of vessels. In places the collagen and reticulum fibres are slightly separated by red corpuscles and leucocytes. In others they are more widely separated, and are partly destroyed, by groups of large cells, whilst in the areas that appeared granular to the naked eye the vascular collagenous tissue is reduced to slender trabeculæ which imperfectly separate masses of large cells into acinar groups (Fig. 3). Mallory's method shows a net of coarse filaments of fibrin within the acini but no glia fibrils. Most of the large cells are completely necrosed; the nuclei of the remainder are almost all pyknotic. The cells are dissociated. The better preserved are round, or polygonal with rounded angles. In mean diameter most measure about 9μ and have a nucleus of 7·5μ, but there is much variation in size. There are small examples measuring 7·5μ with a nucleus of 4·5 to 6μ, many large examples from 12 to 18μ with nuclei of 8 to 11μ, and a few giant multinucleate forms. The cytoplasm in hæmatoxylin and eosin preparations is hyaline and stained deeply by eosin; in phosphotungstic acid hæmatoxylin preparations it is finely granular. The nuclei that are not pyknotic show a delicate membrane, chromatin threads arranged in a moderately close net of angular mesh, and many conspicuous nodes. A few contain no nucleoli or one to three small nucleoli. Most contain one large nucleolus, rarely two or three large nucleoli. In phosphotungstic acid hæmatoxylin preparations most of the pyknotic nuclei show such large nucleoli. The large nucleoli measure in diameter from 1μ in the smaller cells to 5μ in some of the largest. Similar cells frequently lie within vessels, even arteries.

The cystic tissue included in the sections lies deep to the above. In one block this tissue is very scanty. In the other it shows an outer layer, and an inner or deeper layer, which merge into each other. Both layers are less hæmorrhagic than the solid tissue. Both are spongy. In the outer layer the cavities are usually rounded, and some are large. The largest is empty and is lined with large flattened cells. Other cavities contain blood and are apparently venous sinuses. Many others contain desquamated ribbons of columnar epithelium (Fig. 4), or desquamated, dissociated polygonal and round epithelial cells. The columnar cells measure from 11 × 4μ to 12 × 6μ, with nuclei of 7 × 4μ to 8 × 6μ. In phosphotungstic acid hæmatoxylin sections they have a granular cytoplasm, and a membrane stained deep blue on their free surface; they show no cilia and no blepharoplasten. No mucous secretion and no mucous goblet cells are shown in a series of sections stained with mucicarmin. The nuclei have a stout membrane, a somewhat close net of threads of chromatin, small nodes, and one or two large, conspicuous, nucleoli, measuring up to 2μ in diameter. In some ribbons the cells lie in more than one layer. The free examples have no membrane. They measure in mean diameter from 6 to 9μ, with nuclei of 4·5 to 6·5μ.

The trabeculæ between the cavities are usually broad. Their structure varies very greatly. In places scanty spindle fibrocytes lie in a stroma of collagen fibrils. Frequently very scanty, spindle, and stellate cells and a loose net of very delicate fibrils in an unstained matrix form a jelly-like tissue. In places the cells of this jelly tissue increase greatly in number, while their nuclei become more rounded, until an embryonic tissue is formed in which small cells with round or slightly oval nuclei lie closely packed in the meshes of a delicate reticulum. In a few places there are small rounded areas of embryonic hyaline cartilage (Fig. 4). In the periphery of each such area is a narrow condensed zone in which the reticulum has narrow meshes enclosing small fusiform cells. Towards the centre the meshes enlarge and become polygonal, whilst the reticulum fibrils swell and in hæmatoxylin and eosin preparations form a hyaline, blue matrix. Each mesh usually contains a single polygonal cell with a clear space round its cytoplasm; rarely, two such cells lie in a single mesh.

The inner, deeper layer of cystic tissue is cavernous (Fig. 5). Numerous, long, narrow, irregular communicating clefts are separated by trabeculæ of slightly greater width. The trabeculæ are formed by scanty spindle fibroblasts and occasional unstriped muscle-fibres in a stroma of stout collagen fibres. They contain a few cross sections of wide capillaries engorged with blood. No elastic fibres can be demonstrated. A few of the outermost clefts contain free columnar and round epithelial cells similar to those in the spongy layer immediately above. The remaining clefts are empty or contain a variable number of red corpuscles. They are lined here and there with discrete cells or groups of cells in contact. The cells are of lozenge or spindle shape. They measure from 10 × 4μ with a nucleus of 6 × 4μ, to 29 × 6μ with a nucleus of 6 × 5μ. The larger examples are frequent. The cytoplasm is deeply stained and the nuclei are pyknotic.

In serial sections of the block which contained most of the cystic tissue no other structures were found.

The tumour lies in the position of an ovary beneath a Fallopian tube of normal structure. In its lowest part is a cavernous tissue which is well differentiated and appears to be part of the organ in which the tumour has arisen and not to be part of the neoplasm. The form of the spaces and the structure of the intervening trabeculæ resemble closely those of the rete testis except that elastic fibres are absent. The characteristic lining, however, of the rete testis with closely packed small cubical, occasionally flattened cells is absent. According to Koelliker[1] the rete ovarii may be lined with flattened cells. I have not, however, seen so extensive a rete in the ovary. Further, the lining resembles endothelium both in the form of the cells and their apparent intermission, and there is no difference in structure between the transversely cut capillaries filled with blood and the longitudinally cut irregular spaces which are more or less empty. There can be no doubt that they are both

part of a vascular cavernous tissue. The hilum of the normal ovary contains a cavernous tissue of wide venous and capillary spaces with arteries in the trabeculæ between them. In adults the venous spaces with complete or incomplete muscular walls are in excess of the capillary spaces, but in young girls they are less numerous and less conspicuous. The cavernous tissue in the present case probably represents this cavernous tissue of the hilum of the ovary, but it differs so strikingly from the normal in the absence of elastic fibres, definite venous spaces and arteries, that it cannot be accepted as proof that the organ is an ovary.

Immediately above the cavernous tissue and merging into it is a jelly-like tissue and a cellular-embryonic connective tissue containing nodules of hyaline cartilage and enclosing cavities lined with tall columnar cells. This tissue is clearly teratoid. It includes derivatives of two germinal layers but no derivatives of the third layer, ectoderm, were found. It is not, therefore, proved to be a teratoma, but the mixture of tissues is one so often met in atypical or embryonal teratoma (Arkanazi [2]) that there can be little doubt that it is an atypical teratoma.

The most abundant tissue of the neoplasm is superficial, and consists of a malignant medullary growth of spheroidal cells. The extensive degeneration and necrosis caused by the venous infarction makes it impossible to identify these cells with certainty. The better preserved cells, however, resemble closely those of the large round- or spheroidal-celled carcinoma, formerly called sarcoma, that may occur alone in the testicle and that has been found in the London Hospital institute of pathology so often as a constituent of atypical teratoma of the testicle (Cairns [3]). The nuclei, when not pyknotic, have a similar structure. The cytoplasm is, however, more homogeneous, deeply stained, and eosinophil. But these differences in the cytoplasm are more pronounced in the cells with pyknotic nuclei and in the completely necrosed cells. They appear to be an expression of degeneration—a coagulation necrosis.

The tumour, therefore, appears to be an atypical teratoma associated with spheroidal-celled carcinoma, similar to the growth that occurs frequently in the testicle. Its relation to the hilum is identical with that in many atypical teratomata of the testicle but the structure of the hilum suggests ovary and not testicle.

## REMARKS

Apart from the atypical teratoma with spheroidal-celled carcinoma in one of the sex glands, the abnormalities in this case are sexual hypoplasia, which is shown by the absence of menstruation and the imperfect development of uterus and external sexual characters, and a mild degree of gigantism, which is shown by the "heavy" build of the patient, the large size of the skull and other bones, and the delayed union of certain epiphyses. Although the patient appears to be a woman, and certainly shows no masculine features, the sex has not been unequivocally established, for there is no record of even the naked-eye appearance of the left sex-gland, and of the right the most that can be said is that the cavernous tissue in the hilum suggests ovary rather than testicle. A very small uterus was felt with difficulty by digital examination.

In view of the disproportionately large size of the sella turcica, the gigantism might be attributed to enlargement and over-function of the pituitary. There is no evidence, however, that the condition is acromegalic in the sense of being due to a chromophil adenoma of the anterior lobe, for no signs of pressure on clinoid processes or optic chiasm are present, the terminal phalanges of the fingers are not "tufted," the hand is not of the acromegalic shape, and there is no disturbance of sugar metabolism or of water intake. While it is true that the functions of the sex glands are often depressed in acromegaly, it is scarcely possible that a pituitary tumour could produce a complete arrest of sexual development along with such slight changes in somatic development and function. On the other hand changes in body growth, and even disproportionate enlargement of the pituitary, are known to follow primary failure of the sexual glands. Enlargement of the sella turcica and ununited epiphyses of humerus, radius, ulna, and pelvic bones were found by Tandler and Gross [4] in the post-mortem examination of a negro aged 28 who had been castrated in childhood. Altmann [5] described the organs in ten cases of eunuchoidism and one of late castration in males: the average weight of the fixed pituitaries was 0·766 g., which is in excess of the corresponding normal figure of 0·613 g. quoted from Erdheim and Stumme, and delayed union of epiphyses was often found. Those examples are in males. Records of castration and eunuchoidism in females are rare, but Borak and Windholz [6] describe "enlargement" of the pituitary (weight not given) with a great increase of eosinophil cells in a woman of 33, in whom the ovaries had been irradiated two and a half years previously to the extent of destroying all the Graafian follicles; and Steinitz [7] described a tall eunuchoidal woman of 50 in whom the sella turcica was "somewhat broad." In view of these findings, therefore, it is reasonable in the present case to attribute not only the sexual hypoplasia but also the gigantism with the pituitary enlargement, to a deficiency of sexual hormones: the growth changes as well as the sexual ones are eunuchoidal.

Eunuchoidism implies failure of both sex glands. The right gland was destroyed by the tumour, and removed, when the patient was 13 years old. The left gland, however, cannot have been destroyed by a similar process, for the tumour was malignant, and if a metastasis or another such tumour had occurred before puberty in the left gland, it would presumably have declared itself before the patient was 24. The defect of the left gland, therefore, must have been either a developmental failure or an atrophic process, and it must date from an early age, for when the patient was examined under anæsthesia, at the age of 24, the only palpable structure representing the left gland was a nodule the size of a haricot bean. There is no evidence to show whether the right gland was originally normal or defective, but it is not unlikely that both glands were similarly abnormal before the development of the tumour in the right one.

The diagnosis is therefore: eunuchoidism in an apparent female aged 24, due to primary defect of the sex glands; atypical teratoma with spheroidal-celled carcinoma of the right sex gland, removed on account of torsion at the age of 13.

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# ACTION OF FOLLICULIN AND PROLAN ON THE REPRODUCTIVE ORGANS OF THE BAT DURING HIBERNATION

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The following experimental investigations arose out of a query of a clinical character. A few years ago [1] I was able to show that such various clinical pictures as amenorrhœa and prolonged uterine hæmorrhage could be produced by the same functional process, namely, as a result of too powerful and too prolonged a production of the follicular hormone, folliculin (œstrin). I have called these functional disturbances polyhormonic syndromes. Their causation depends on the persistence of the follicle. The follicle grows without bursting and so without the formation of a corpus luteum. As a result of the persistence of the follicle a continuous stream of folliculin is secreted which in its turn leads to a hyperproliferation of the uterine mucosa, which in consequence may develop into an adenocystic hyperplasia. We find this anatomical structure not only in polyhormonic hæmorrhages but, as I have recently shown,[2] also in cases of primary polyhormonic amenorrhœa.

The failure of the follicle to burst is therefore of real clinical significance, and it thus appears to me necessary to investigate thoroughly the causes of follicular rupture. As shown in the earlier experiments, the ovary is controlled by the anterior pituitary lobe, which with its gonadotropic hormone (Prolan) brings about ripening of the follicle and ovum. Rupture of the follicle also is doubtless caused by the anterior pituitary lobe, since a rupture of the follicle as well as a migration of the ovum through the tubes into the uterus can be produced in an immature animal by means of prolan. It is therefore certain that follicular rupture is hormonic in its causation. The question remains whether, in addition, exogenous conditions do not also play a part as contributory factors. It is well known that in many animals—e.g., rabbits—rupture of the follicle is in most cases produced only as a result of coitus, whereby the stimulus for follicular rupture, as Parkes and Fee have shown, occurs also via the anterior pituitary lobe. Among the exogenous factors, climate and changes of temperature can also play a part. Clinically we are aware that in women who go to live in another climate menstruation may cease for a protracted period. I have observed several cases of this kind where the amenorrhœa associated with change of climate was of the polyhormonic type, due to the persistence of the follicle. Can the extraneous factor of change in temperature influence the rupture of the follicle? It seemed to me that tests on the hibernating animal were most suitable for the experimental elucidation of this question, since here the reproductive organs are in a state of complete functional rest. I made my investigations on bats, and apart from the question of rupture of the follicle I studied a few other problems of which the following is a brief report.

Bats generally begin to hibernate in November. They suspend themselves in clusters, rolled up into balls, in caves or in cellars. The body temperature of the animals drops rapidly and approximates the surrounding temperature, being about 2° higher than that of the air. A homiothermal animal develops into a poikilothermal one. Before the commencement of hibernation copulation takes place, but not fertilisation. The sperm remains throughout the whole of the winter in the uterine cavity. In the spring the ovum matures spontaneously and still finds spermatozoa capable of fertilisation in the uterine cavity.

### THE TESTS

The bats [3]—which were sleeping in separate cages in a cellar at 4° C.—were anæsthetised, one of the horns of the bicornute uterus incised, a drop of secretion withdrawn from the uterine cavity by means of a platinum loop, and then put into Ringer's solution. It is astonishing to see in the drop of secretion which has just been withdrawn from the cold torpid animal masses of actively motile spermatozoa. In this connexion the temperature of the diluting fluid is of minor importance. The spermatozoa are motile in a fluid at 37° C. as well as in one at 5° C. I had the impression, however, that a low temperature of the Ringer's solution (5°–10° C.) increased the motility of the spermatozoa. In other mammals, also, the spermatozoa show a maximum of motility at a temperature of 10°–15° C. (Hammond and Walton, Moore, Crew, Kraus). It may be a purposeful arrangement that the testes lie outside the abdominal cavity in the scrotal sac, where the temperature is lower.

I believe that the spermatozoa pass the winter in the uterus of the bat in a freely motile state, although they show their full motility immediately after withdrawal from the uterine cavity. It must be pointed out that I was able to demonstrate the presence of spermatozoa in the uterine cavity in only some of the animals; frequently the uterus contained none.

The examination of the ovaries was of special interest. These small structures lie near the proximal end of the uterine cornua. Often they are hardly recognisable on account of the large cushion of fat which the bat has accumulated in the abdominal cavity for the period of hibernation. The ovaries are characterised by an intense yellow colour such as I have not hitherto seen in mammalian ovaries. The yellow colour is, I believe, due to deposits of carotinoids, which might point to the relationship of carotinoids to sexual function, as was first shown by H. von Euler. These pigments cannot be lying in a corpus luteum, as is usual in the ovaries of mammals, since the ovaries of the bat never contain a corpus luteum in winter. The pigments are diffusely spread throughout the whole ovary.

A large number of the ovaries were examined by serial section. In this way it was shown that whereas one ovary would always be in a state of functional rest and consist only of primordial follicles, another would contain usually one, seldom two, enlarged follicles with cumulus oöphorus. These lie a little removed from the surface.

The vaginal mucous membrane of the bat exhibits in winter 6–8 rows of polygonal cells above the basal layer, without any cornification of the uppermost layer of cells being observed. Nor is there a mucous cell layer present. Occasionally one finds also in the vagina well-preserved spermatozoa. On histological examination of the uteri one finds, in some of the animals, spermatozoa in plenty. I have, however, never found the spermatozoa in the uterine cavity

[1] Zentralbl. f. Gynäk., 1930, liv., 1.

[2] Unpublished work to appear in Acta Gynecologica Scandinavica.

[3] I am greatly indebted to Dr. Eisentraut for providing the bats.

in such numbers as to be packed closely together in the manner Courrier pictures in his book. It is possible that copulation takes place in only some of the animals before hibernation, or that the spermatozoa perish; at all events, one can demonstrate spermatozoa in the uterus in only a proportion of the animals.

The hibernating bat appears to me to be a good object for the study of exogenous influence on the rupture of the follicle. Can one produce a rupture of the follicle by means of a change in temperature? As far as I have been able to discover in zoological literature, this question has hitherto been answered in the negative. Benecke observed in the case of bats, kept during the winter at room temperature, simply an enlargement of the follicle, but no rupture. My observations were different. After the bats had been sleeping for a while in the cellar, they were brought into the laboratory where the temperature was 18°–20° C. The animals woke up at night and took some food. After 14 days I was able to discover an early pregnancy with a living fœtus! This discovery was made on Dec. 23rd. The change in temperature had therefore sufficed, even in winter, to bring about a rupture of the follicle. The ovum had travelled into the uterus and was there fertilised by a spermatozoon. Rupture of the follicle was therefore influenced by the exogenous stimulus. It thus appears to me to have been proved, and this is clinically important, that external climatic influences may cause rupture of the follicle. Doubtless here also hormonic factors—i.e., the anterior pituitary lobe—play the decisive part, since I was also successful in bringing about the rupture of a follicle in a bat in midwinter by means of prolan. Here again the ovum wandered into the uterus, was fertilised and a living fœtus resulted. The highly important sex hormone, the gonadotropic anterior pituitary lobe hormone—i.e., prolan—is therefore able to bring about follicular rupture in hibernating animals in winter, an occurrence which does not take place naturally until the spring. I conclude from these experiments that climatic influence on ovarian function is dependent on the pituitary (anterior lobe).

In further experiments the influence exercised by the follicular hormone (folliculin) as well as by the gonadotropic anterior pituitary lobe hormone (prolan) on hibernating bats was tested. It was possible to produce by means of folliculin a cornification of the superficial layers of cells such as we find in mice and rats during œstrus. Whether this cornification occurs physiologically in bats during the warm season I cannot say. Circumstances did not allow me to continue the investigations in the spring.

If prolan is injected into the bats, the enlarged follicle, already physiologically present, can be converted into a corpus luteum. More than this, I was able to produce, by the introduction of large doses of prolan, a series of 4–6 lutein bodies in the ovary—i.e., the same ovary contained several corpora lutea. Although the ovary in winter contains only one, at most two, enlarged follicles, there were here 4–6 newly formed corpora lutea as a result of "hyperprolanisation." They appeared to be very well vascularised and must therefore be regarded as capable of functioning.

### SUMMARY

(1) The exogenous stimulus of warmth produces rupture of the follicle in bats during winter. The ovum wanders through the tube into the uterus and is there fertilised by a spermatozoon. A normal pregnancy occurs with a living fœtus.

(2) The gonadotropic anterior pituitary lobe hormone—i.e., prolan—is capable of producing rupture of the follicle in bats during winter; here also a normal pregnancy with a living fœtus is produced.

(3) By means of folliculin and prolan we can produce in the bat during winter all the phases of the generative process; œstral reaction of the vaginal mucous membrane, conversion of the enlarged follicle into a corpus luteum, hyperluteinisation, pregnancy.

## SORBITOL (SIONON) FOR DIABETICS

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Sionon is the trade name for D-sorbitol, $C_6H_8(OH)_6$, a polyhydric alcohol which is closely related to the hexoses. It does not reduce Fehling's solution, nor does it yield an osazone. It has been put on the market as a substitute for sugar in diabetes. The substance is a light white powder, easily soluble in warm water, and having a sufficiently pleasant sweet taste which is not destroyed by cooking.

The effect of sionon on the blood-sugar has been studied on two cases of juvenile diabetes. Two methods have been used. In the first 25 g. of dextrose were given to the fasting subject and the blood-sugar estimated at half-hour intervals for three hours. A similar quantity of sorbitol was given under similar conditions a few days later. Figs. 1 and 2 and Table I. show these results. The rise in the blood-sugar after sorbitol is slight compared with that of dextrose.

Table I. (Case 1)

| — | Dextrose 25 g. | | | Sionon 25 g. | | |
|---|---|---|---|---|---|---|
| | Blood-sugar % | Urine-sugar. | Acetone bodies. | Blood-sugar % | Urine-sugar. | Acetone bodies. |
| Before | 0·176 | 0 | + + | 0·200 | 0 | + + |
| ½ hour | 0·206 | 0 | .. | 0·215 | .. | .. |
| 1 „ | 0·366 | 0 | + + + | 0·225 | 0 | + + + |
| 1½ hours | 0·434 | .. | .. | 0·263 | .. | .. |
| 2 „ | 0·522 | + + + | + + + | 0·280 | Sl. tr. | Tr. |
| 3 „ | 0·500 | + + + | + + | 0·263 | .. | .. |
| **Case 2** | | | | | | |
| Before | 0·100 | + | + + + | 0·083 | Sl. tr. | + + + |
| ½ hour | 0·153 | .. | .. | 0·121 | .. | .. |
| 1 „ | 0·253 | + | + + + | 0·120 | Tr. | + + + |
| 1½ hours | 0·297 | .. | .. | 0·076 | .. | .. |
| 2 „ | 0·310 | + + + | Sl. tr. | 0·082 | .. | .. |
| 3 „ | 0·216 | + + + | 0 | 0·065 | + | + + |

Table II. (Case 3).—*One Mild Diabetic Case*

| Blood-sugar. | Glucose (45 g.). | Sionon (50 g.). |
|---|---|---|
| Before | 0·100 | 0·164 |
| ½ hr. after | 0·181 | — |
| 1 „ „ | 0·266 | 0·184 |
| 2 hrs. „ | 0·186 | 0·178 |
| 3 „ „ | — | 0·153 |

A similar result was obtained with a mild elderly diabetic, in whom a slight rise in the reducing value of the blood was obtained, but much less than with glucose (Table II.). This slight rise is not understood.

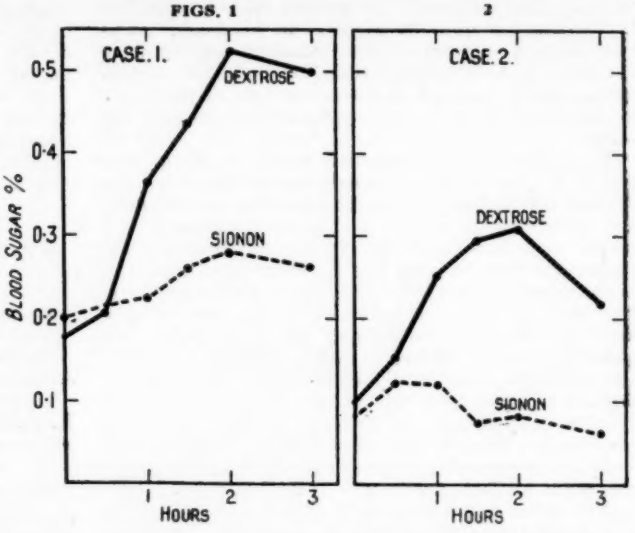
In the second method sorbitol was added to the diet and the change in the blood-sugar was examined.

In Case 1 25 g. and in Case 2 40 g. a day were given. Examination of Table III. shows that there was only a slight difference in the general level of the blood-sugar. In both cases, however, this was in an upward direction, so it may be concluded that there is a small effect on the blood-sugar level.

The urinary acetone excretion as shown by Rothera's test was also noted in order to see if there was any antiketogenic action. The differences were not marked, but again in both cases less acetone was passed when sorbitol was being given. An examination of the acetone excretion in Table I. shows a similar result, especially in Case 1; here the fasting acetonuria is practically abolished by sorbitol.

Thirdly, the immediate effect of sionon in relieving insulin hypoglycæmia was observed. In Table IV., both from the blood-sugar figures and the feelings of the patients, it is clear that sionon had no effect, whereas glucose produced a quick change.

FIGS. 1 2




And fourthly, and probably most important and decisive, sionon failed to increase the glycogen in the liver of starved rats. Glucose and all other available carbohydrate quickly does so, as is shown in Table V.

TABLE III.—*Effect of Adding Sionon to the Diet*

CASE 1

| — | Blood-sugar percentage. 11.30 A.M. | 2.30 P.M. | 5 P.M. | Acetone 24-hr. urine. |
|---|---|---|---|---|
| Before .. | 0·061, 0·075, 0·083 } Av. 0·073 | 0·207 (0·207) | 0·209, 0·266 } Av. 0·237 | Tr., „, 0, Tr. |
| 25 g. sionon daily. | 0·067, 0·088, 0·100, 0·084 } Av. 0·085 | 0·076, 0·122 } Av. 0·099 | 0·255, 0·306, 0·258 } Av. 0·273 | Tr., 0, 0, 0, 0 |
| After .. | 0·088, 0·064, 0·073, 0·096 } Av. 0·084 | 0·077, 0·159 } Av. 0·118 | 0·163, 0·298 } Av. 0·230 | 0, 0, +, 0, 0, ++ |

CASE 2

| | | | | |
|---|---|---|---|---|
| Before .. | 0·067, 0·069 } Av. 0·068 | 0·172, 0·122 } Av. 0·147 | 0·090, 0·121 } Av. 0·105 | ++, 0, 0 |
| 40 g. sionon daily. | 0·078, 0·069, 0·095 } Av. 0·081 | 0·153 (0·153) | 0·112 (0·112) | 0, 0, 0, 0 |
| After .. | 0·071, 0·060 } Av. 0·066 | 0·118 (0·118) | 0·100 (0·100) | Tr., Tr., Tr. |

TABLE IV.—*Effect of Sionon in Hypoglycæmia*

| | Case 1. | Case 2. | Remarks. |
|---|---|---|---|
| B.-s. per cent. .. .. | 0·067 .... | 0·079 .... | Symptoms. |
| 20 g. sionon given. | | | |
| B.-s. ½ hr. later .. | 0·058 .... | 0·077 .... | Symptoms persist. |
| 20 g. glucose given. | | | |
| B.-s. ½ hr. later .. | 0·125 .... | 0·174 .... | Symptoms gone. |

B.-s. = Blood-sugar.

The condition of the small intestine in the rats fed with sionon was interesting. Intense hyperæmia and dilatation was present, which from our experience with other similar "sugars" makes it probable that sionon is not absorbed and acts as a foreign sugar in the intestine. To our mind this limits the amount of sionon that can safely be used to be a maximum of 50 g. a day, and this should be given in divided doses.

TABLE V.—*Liver Glycogen in Rats three hours after 2 g. Sionon or Glucose*

Average from four rats.

| Sionon. | Tap water. | Glucose. |
|---|---|---|
| 0·114 per cent. .. | 0·124 per cent. .. | 0·980 per cent. |

CONCLUSIONS

Sionon (D-sorbitol) can safely be used as a sweetening agent for diabetics as it does not enter directly into carbohydrate metabolism. The probability of intestinal irritation must limit the dose. Also its price makes it a luxury, which can usually be more economically provided by the use of ordinary sugars and slightly more insulin.

# Clinical and Laboratory Notes

## A NOTE ON THE USE OF ACETYLCHOLINE IN PARALYTIC ILEUS

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MY experience of the use of acetylcholine extends over the last three years, during which period I have used it in about 20 cases. My attention was first attracted to its use by the papers of Lawrence Abel and Wolf and I have since had opportunity of confirming their findings, particularly in so far as they apply to paralytic ileus associated with and due to general or local peritonitis.

The immediately post-operative or "active" ileus is best treated by rest and morphia, but at varying intervals after the second day a very grave condition is liable to arise, characterised by constant abdominal pain, vomiting, progressive abdominal distension, rising pulse-rate, and collapse. An enema as a rule gives a "coloured" result only or is retained, and in the absence of relief to a stomach-tube the patient's condition gets rapidly worse and the imminence of a fatal outcome is apparent. My practice is to give

half to one pint of normal saline and 5 per cent. glucose intravenously, a human or ox-bile enema, and an initial 0·2 g. of acetylcholine intramuscularly followed by 0·1 g. at hourly intervals for three hours. The following two cases in which acetylcholine and intravenous saline alone were used will serve to illustrate its use.

CASE 1.—A schoolboy, aged 16, was operated on for perforated gangrenous pelvic appendicitis and general peritonitis 60 hours after the onset of the condition. On the fourth day his condition was one of severe paralytic ileus with muttering delirium. The bowels had not acted since operation, the abdomen was distended and tympanitic, and the blood-urea was 270 mg. per 100 c.cm. One pint of intravenous saline and glucose was given and acetylcholine as above. During the next six hours the patient passed many copious fluid stools and made an uninterrupted recovery. Subsequent investigation excluded renal disease.

CASE 2.—A professional man, aged 45, was seen with a four days' history of acute abdominal pain, much vomiting, and constipation. He was obviously very desperately ill—temperature 102·5° F., pulse 134. The Hippocratic facies was well marked and the abdomen was distended and showed generalised rigidity. At operation the peritoneal cavity was found to be full of fæculent pus from multiple perforated diverticulitis of the iliac colon. This perforated area was embedded, and pelvic drainage and a cæcostomy performed. A litre of intravenous saline was given at operation. By the second day very little drainage had occurred by the cæcostomy. The patient was distressed and the abdomen distended and tympanitic. Saline introduced via the cæcostomy was retained. Acetylcholine 0·2 g. was now given intramuscularly, followed by 0·1 g. at hourly intervals. Within two hours the cæcostomy had acted several times and the patient made an uninterrupted recovery.

The work of Führer and more recently Vartiainen has shown that eserine causes a very remarkable sensitisation of muscle to acetylcholine—presumably by the inhibition of choline esterase. The clinical application of this will be of interest.

I wish to thank Mr. A. J. Walton for permission to record the above cases.

## THE PSYCHOTIC FORM OF ACUTE EPIDEMIC ENCEPHALITIS

### CLINICO-PATHOLOGICAL REPORT OF A CASE

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ACUTE epidemic encephalitis is a disease so protean that an early diagnosis of the more irregular forms is a matter of some difficulty. The great variation in its symptoms is reflected in the more or less cumbrous classifications of its clinical manifestations, Osler in his text-book giving no less than 14 forms. Von Economo [1] classifies the symptoms into three basic groups — somnolent-ophthalmoplegic, hyperkinetic, and amyostatic-akinetic—and a fourth group of "irregular forms." In the latter he includes a purely "psychotic type," which, up to now, has been quite uncommon. It is of considerable interest, however, to the psychiatrist, in view of its resemblance to other acute mental disorders. In fact, one of the very first cases of encephalitis lethargica in 1916 was brought to the Vienna Psychiatric Clinic under the diagnosis of "amentia with hysterical attributes."

The following is an illustrative case which was admitted to the Cardiff City Mental Hospital with the symptoms of an acute psychosis.

A. B., aged 21, was admitted on Nov. 3rd, 1932, suffering from an acute confusional condition.

The family history showed nothing of note. On leaving school patient worked as a labourer until aged 18; subsequently as a milkman's assistant. No behaviour disorders or psychotic traits had ever been noticed in him. He was of a quiet and reserved disposition, fastidious in habits, and conscientious in his work.

*Previous illnesses.*—Patient suffered from a tuberculous hip as a child of 9, otherwise no illnesses. Of normal mental development.

*History of present illness.*—On Oct. 24th, 1932, he complained of headache and feverishness, but continued at his work until the 26th. On the following day he attended his family doctor, who diagnosed influenza and sent him to bed. He became depressed and emotional, complained of headache and abdominal pain, and was afraid to be left alone. On Oct. 29th the doctor called and diagnosed the case as "influenza with depression." He ordered rest in bed and fluid diet. The next day patient had improved and appeared almost his usual self, but two days later he again became depressed and apprehensive, and was apparently hallucinated, stating that he could see men fighting and hear them shouting. He was afraid to be left alone, as he thought people in the house opposite were going to murder him. On the next day he was more restless and excited. He rushed into the street shouting that someone had struck him, and that he was about to be killed. Shortly afterwards he was certified and sent to hospital.

#### CONDITION ON ADMISSION

The patient was of good physique. His appearance was toxic. No marks of injury. Temp., 98·6° F.; pulse, 110; resp., 18. Heart and lungs normal. The tongue was dry and furred. Sordes present on lips and teeth. Early pyorrhœa. Liver and spleen not enlarged.

*Nervous system.*—General restlessness. No involuntary movements. Slight degree of neck rigidity, but no Kernig's sign. Speech and gait normal. Cranial nerves normal. No nystagmus, diplopia, or ophthalmoplegia could be discovered during the whole course of the illness. Pupils moderately dilated, equal, and reacted well to light and accommodation. Sensation was difficult or impossible to test owing to complete lack of coöperation. He complained of headache and generalised pains in the chest and abdomen. The tendon reflexes were present and normal. The plantar reflex gave a flexor response on both sides; and the abdominal reflexes were all present.

*Urine.*—Acid. S.G. 1020. Urates. Trace of albumin; no other abnormal constituent.

*Blood count.*—Red cells, 7,470,000; white cells, 16,800; Hb, 100 per cent.; C.I., 0·73. Wassermann reaction negative.

*Mental state.*—The patient was admitted in an agitated and excited condition, struggling and shouting when receiving attention. He proved somewhat resistive to physical examination, shrieking out when touched that he was in agony and could not breathe. He stared about him wildly and at times jumped out of bed in a state of great agitation, probably seeking flight from terrifying hallucinations. Occasionally he was quite calm and controlled, and answered questions relevantly, but these lucid intervals were present only in the early stage. He was generally extremely noisy and restless, his talk frequently being accompanied by panting, grimacing, and wild gesticulations. He had to be fed and his habits were faulty.

The stream of talk was quite incoherent but accelerated. His incoherence at times amounted to verbigeration, and clang associations were abundant. His mood changed rapidly from noisy elation to terror-stricken fear, but during the intervals between his turbulent outbursts he appeared calm and indifferent. His endeavours to explain himself were largely confused, but he appeared chiefly preoccupied with auditory and visual hallucinations of a persecutory nature. He heard voices threatening to strangle him, and was constantly seeking protection from visions of men who approached him with murderous intent. Owing to his confusion and clouding of consciousness he was disorientated and grossly amnesic, and mistook the identities of those around him.

#### PROGRESS OF THE CASE

He was put on a fluid diet, and was given saline and glucose enemata owing to the difficulties of feeding and

lack of fluid intake (as shown by the relative polycythæmia). Morphia and hyoscine were given twice or thrice daily to combat the restlessness. He ran an irregular pyrexia; the temperature rose in the later stages to a maximum of 104·4° F., and the pulse steadily weakened in spite of all supporting treatment.

For a time the condition was regarded as a post-influenzal toxæmia, and the absence of definite neurological signs seemed to support this. In view, however, of the headache, delirium, and slight neck rigidity, a meningeal or cerebral infection was suspected, and on Nov. 11th a lumbar puncture was performed. The fluid escaped under increased pressure, was clear, and formed no coagulum on standing.

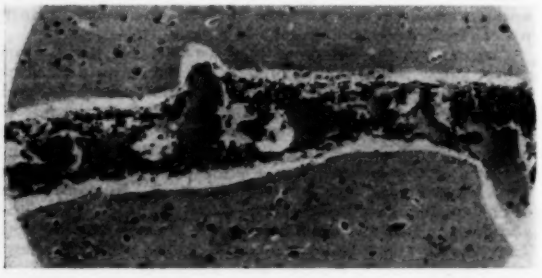
*Cerebro-spinal fluid.*—Cells: 38 per c.mm., mainly small lymphocytes; two or three large lymphocytes seen; no polymorphs. Ross-Jones test: positive. Acetic anhydride test: negative. Colloidal benzoin reaction: 0 0 1 1 1 2 2 2 2 2 0 0. No tubercle bacilli found. These findings, in conjunction with the clinical picture, indicated a diagnosis of an acute meningo-encephalitis.

On Nov. 11th the patient developed a terminal parotitis and he died on the following day.

PATHOLOGICAL FINDINGS

*Naked-eye examination.*—The meninges were congested, and the grey matter of the cerebrum showed distinct pink coloration.

*Microscopic examination.*—The pia-arachnoid showed a slight degree of infiltration with small round cells. The brain substance showed a well-marked inflammatory lesion characterised by cellular infiltration of the vessel sheaths, typical of that seen in acute epidemic encephalitis. The inflammatory cells were for the most part small and round with darkly staining nuclei. The lesions were confined to the grey matter and were most pronounced in the basal ganglia. The superior part of the optic thalamus in particular was very severely affected, while the inferior part showed only slight changes. The midbrain showed several foci of perivascular infiltration, but none of these affected the oculomotor nuclei. The medulla oblongata and the cervical region of the spinal cord showed no lesions. The frontal lobe of the cerebrum showed very marked perivascular infiltration both of vessels deep in the grey matter and also of the vessels near the surface, but those in the sulci were not affected. No lesions were found in any other part of the cerebral cortex.



Section showing perivascular infiltration in the deeper layers of the frontal cortex. (× 85.)

Clinically this case presented the features of an acute psychosis, resembling a toxic-exhaustive state. Neurological signs were absent, and the only clue to a correct diagnosis was the findings in the cerebro-spinal fluid. Psychotic forms of acute epidemic encephalitis are rare, and the pathological histology on this case has been fully investigated in order to determine whether there was anything in the distribution of the lesions to account for the unusual symptoms. The main abnormal feature was a marked involvement of the frontal lobes. This appears to be quite rare, as Boyd [2] found no such lesions in his series of cases, though Delater and Rouquier [3] report a psychotic case in which the pathological changes were confined to the cortex and meninges.

The extreme confusion, amnesia, and disorientation may possibly be accounted for by this cortical involvement, but the auditory and visual hallucinations could not be explained in the same way, for no lesions were found in the temporal and occipital lobes. The significance of the frontal involvement is thus not very apparent, for undoubtedly the clouding of consciousness, intellectual impairment, and hallucinosis could have been toxæmic in origin, which is usually the case in toxic-exhaustive states.

The severe spontaneous pains are readily explained by the intensity of the lesions in the thalamic region, and the absence of ophthalmoplegia and diplopia by the fact that, pathologically, the oculomotor nuclei were not involved.

The main difficulty in the diagnosis of this type of case lies in differentiating the acute illness from influenza, and the liability to mistake the psychosis for a post-influenzal toxæmic state. In this connexion the importance of examining the cerebro-spinal fluid can scarcely be overestimated.

We are indebted to Dr. P. K. McCowan, medical superintendent, for permission to publish this case.

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## A CASE OF RETENTION OF URINE

BY FREDERICK M. PURCELL, M.B. DUB., D.T.M. & H.
MEDICAL OFFICER, GOLD COAST

THE extraordinary degree of dilatation of the bladder makes the following case worthy of record.

A male African over 70 years of age and very senile in appearance was brought to hospital on Oct. 8th, 1932. He had not passed urine for four days and had been constipated for three days. He stated that he had always passed water three times daily until Oct. 4th, when he had awakened in the early morning and found himself unable to micturate. His general condition was weak, and his arteries were extremely tortuous. The heart-rhythm was slow, the sounds weak, and beats were frequently but irregularly missed. His abdomen showed a tense uniform swelling, ending abruptly in the lower part of the epigastrium, giving a flat note on percussion and a fluid thrill. There was no subcutaneous œdema, and the absence of shock ruled out the possibility of rupture of the bladder. A large rubber catheter was passed, and 11 pints, 10 oz., of urine was slowly withdrawn; the tumour disappeared. The patient was given 1 c.cm. of pituitrin and kept warm. A hot rectal saline relieved the constipation.

The urine was slightly alkaline, paler than normal, turbid, and rapidly deposited a greyish-white collection of triple phosphate crystals and debris. Its specific gravity was 1010, and a well-marked cloud of albumin appeared on heating.

After the passage of the catheter the temperature rose gradually from normal to 101·6° F.; on the third day it fell to normal, but rose on successive days. On the fourth day the cardiac rhythm became steady at 80, incomplete heart-block being present, 1 : 4. Catheterisation had to be continued to empty the bladder, and 70 to 80 oz. of urine was collected daily. No general prostatic enlargement could be felt, but slight difficulty in introducing the catheter suggested an enlargement of the middle lobe pressing on the urethra. The patient was removed on the seventh day in a moribund condition.

The degree of distension in this case (11½ pints) indicates a pre-existing distensibility from chronic obstruction; the patient was too senile to be trusted about his previous history.

# MEDICAL SOCIETIES

## ROYAL SOCIETY OF MEDICINE

### SECTION OF MEDICINE

AT a meeting of this section held on Nov. 28th, the chair was taken by Sir FARQUHAR BUZZARD, the president. A discussion on

### The Prognosis of Peptic Ulcers

was opened by Dr. CHARLES BOLTON. The probability of permanent healing, he said, depended upon the stage in its life-history reached by the ulcer. An ulcer began as an acute lesion which had a strong tendency to heal, but sometimes became subacute or chronic owing to the circumstances of its position. Its tendency to heal then depended on its age. Its course might be interrupted by perforation or hæmorrhage. Acute ulcers undoubtedly healed in the great majority of cases; when experimentally produced, they invariably healed in three or four weeks provided the animal's health and gastric function were normal. Ulcers found in patients who had died of hæmorrhage were usually advanced in healing, and signs of healing were often seen in the ulcers of patients dead of acute infective disease. The only exception was the ulcer found in patients who died of acute streptococcal septicæmia within ten days. When acute ulcers were multiple the multiplicity was due to scars. The chief obstacle to healing was disordered gastric function. Infection might play a part, but there was no direct evidence of it. The disordered function led to delayed emptying and hyperacidity. Delayed healing could be produced artificially by constituting these conditions, but medical treatment directed to rectifying them resulted in healing of ulcers, and as they healed the emptying time was shortened and the acidity usually reduced. If all acute ulcers could be treated, healing would be invariable. Moreover, it had been shown experimentally that delayed emptying and hyperacidity converted acute into subacute ulcers.

The prognosis for subacute and chronic ulcers was not so good, but nevertheless the majority healed well. Scars were as frequently found as open ulcers at autopsies and operations, and the radiological signs disappeared under medical treatment in about 70 per cent., while the size of the ulcer was materially reduced in a further 10–20 per cent. Recurrence of symptoms was due to failure to heal, formation of a new ulcer, or possibly to the breaking down of the scar. The scar was less resistant than the normal stomach wall because the mucosa covering it was deformed, thin, elementary, and implanted on fibrous tissue poorly supplied with blood. The prognosis in these cases was unsatisfactory in proportion to the chronicity of the lesion. After from two to five years about half of them were probably healed. The part of surgery was to deal with recurring ulcers or ulcers that would not heal. A combination of medicine and surgery gave the best prognosis. The only scientific method of estimating prognosis was repeated radiological examination. The great majority of relapses occurred within two and a half years. If symptoms had been present less than a year half the cases would be cured, but after five years the percentage fell to 10. Ulcer cases were not treated early enough and thoroughly enough.

Dr. J. J. CONYBEARE pointed out that few ulcer cases had been observed over a long period, as the exact diagnosis was a matter of comparatively recent date. The prognosis for life was different from the prognosis for health. Certain complications of a peptic ulcer endangered life: perforation and hæmorrhage. The prognosis for survival after perforation had greatly improved in recent years; not more than 1 per cent. of cases of ulcer died from this cause. Hæmorrhage was much more frequent—between 10 and 20 per cent. perhaps—but the risk of death was small, about 2 per cent., so that about one ulcer patient in four hundred would die of bleeding. Death might also be due to malnutrition and cachexia associated with pyloric stenosis and followed by secondary infections like tuberculosis. Surgical treatment constituted the biggest risk to life; 20 to 30 per cent. of chronic ulcers came to operation and there was an operative mortality of 5–7 per cent. The net risk was a little over 1 per cent. Serious complications might follow operation, e.g., gastrojejunal ulcer and gastrocolic fistula. Carcinoma might develop in a peptic ulcer, but authorities varied considerably in their estimate of the risk. Clinically, however, the short history of gastric cancer did not usually suggest pre-existence of ulcer. In 100 cases of gastric ulcer, W. Alvarez, of the Mayo Clinic, had found 12 with symptoms for less than a year and 81 with symptoms for from two to forty years. In 100 cases of inoperable carcinoma the corresponding figures had been 67 and 21, and only 11 of the 21 had given a history in any way suggesting gastric ulcer. Dr. Conybeare felt that ulcer-cancer was relatively rare.

The prognosis as regards health was much less favourable. Immediate results of treatment were good, but the remote results were less satisfactory. Statistical studies showed that the longer the period of observation the fewer the permanent cures appeared. After four years about 50 per cent. had relapsed. In a series of 190 cases operated on between 1910 and 1915 at Guy's Hospital and traced between 1921 and 1933, 59 per cent. were cured or much improved up to eleven years, and up to twenty-three years after operation 55 per cent. had remained completely well. Only one case of gastric carcinoma occurred, and that was after twenty years of perfect health. Individual prognosis could be estimated on family history, personality, and chronicity of the ulcer. Chances of permanent cure varied inversely with the chronicity. Ulcers were at present rarely diagnosed and treated efficiently in their earlier stages. Elderly persons responded much less satisfactorily than the young. The patient must have enough strength of mind to forego many of the pleasures of life and alter many habits: smoking, alcohol, late nights, fatigue, irregular meals, and so on. To the "ulcer type" these restrictions were peculiarly irksome.

#### DUODENAL ULCERS

Mr. L. N. PYRAH spoke of subacute and chronic ulcers only. They frequently healed. He related the results of an inquiry into the after-history of cases which had been operated on at Leeds General Infirmary between 1922 and 1931. Grade I. patients were perfectly fit; Grade II. patients were almost fit, but occasionally had a little abdominal discomfort. In Grade III. were the patients who had considerable pain and restricted their diet, but who had no symptoms suggesting ulcer. In Grade IV. were those who appeared to have recurrence or some mechanical cause of pain. Many of them had had a symptom-free period, so that the results would

have appeared much better if the investigation had been made earlier. Many recurrences occurred after more than two years. In 389 cases of duodenal ulcer treated by posterior gastro-jejunostomy, the results were unsatisfactory in 21 per cent. (Grades III. and IV.). This was much the most successful operation. Factors in producing bad results were: age (the young patient did much worse than the older one); sex (females being worse than males); length of history (but no general rule emerged from these figures); stenosis (the patient with stenosis was more likely to be relieved, but 10 per cent. of patients with stenosis did badly); and hyperacidity. There was a definite relationship between the emptying-time of the stomach and the results of operation; patients with a hypertonic, hyperacid, and rapidly emptying stomach did worse after gastro-enterostomy. Many surgeons, dissatisfied with the results of this operation, performed partial gastrectomy in order to remove the acid-bearing area; but those who did well after gastro-enterostomy did very well and could eat anything. Gastrectomy had a higher mortality and sometimes led to severe anæmia. Nevertheless partial gastrectomy had its uses in certain types of case. There was no single universal operation for duodenal ulcer; each case should be studied on its merits. Fewer ulcer cases had been sent to the surgeons in Leeds in recent years, but the number of operations for perforated ulcer had doubled. The total satisfactory results of partial gastrectomy for gastric ulcer in Leeds were about 90 per cent.

#### A STATISTICAL STUDY

Dr. A. M. COOKE reported on an examination of the records of between two and three thousand cases. Figures, he said, must be treated with considerable caution. At St. Thomas's Hospital only proved ulcers were classified as ulcer. During the years 1921–31 a total of 2517 cases had been admitted, with a death-rate of 8·9 per cent. Of 191 cases admitted as grave emergencies due to bleeding, during seven years, 24·1 per cent. had died. The alarming mortality was in the perforation group; 22·4 per cent. for gastric and 19·3 per cent. for duodenal ulcer. There was also a death-rate of 11·1 per cent. from gastro-jejunal ulcer. The surgeon was often asked to deal with a moribund patient for whom little could be done, and his bad results were not entirely his fault.

Cases admitted to hospital, as a class, represented the more serious and intractable type. Attending the gastric clinic at St. Thomas's were discharged cases and those not requiring admission. During five years over 700 cases had been collected, and these showed a mortality of less than 5 per cent. Only 2 patients had developed gastric cancer. Of 676 cases traced, 61·8 per cent. were in good health, 27·8 per cent. in fair health, and 4·9 per cent. in bad health, according to their own estimate of their state. The remaining 5·5 per cent. varied. More than half had had to be admitted at some time, 14 per cent. more than once. Among the dangers of gastric ulcer were deficiency diseases following a milk diet, and renal complications of alkalosis. Prognosis might be improved by early medical treatment followed by a permanent regular régime. Many relapses were associated with irregularity of meals. Three operations were particularly useful: suture of perforation, gastro-enterostomy, and partial gastrectomy for chronic cases which had failed to respond to medical treatment or gastro-enterostomy. Dr. Cooke concluded with a plea for the surgical treatment of hæmorrhage, from chronic gastric ulcer, before the patient became too ill to benefit.

## SECTION OF EPIDEMIOLOGY

Dr. J. D. ROLLESTON delivered a presidential address to this section on Nov. 24th, choosing as his subject

### The Small-pox Pandemic of 1870-74

Small-pox, he said, became epidemic in France in 1869, that is before the Franco-Prussian war, and by the end of 1870 it had spread over the whole country. Nearly 60 per cent. of infants were being vaccinated, but a third or more of the French were unprotected. For ten years there had been orders for vaccination and revaccination of the army, but they were not strictly enforced, and during the war, for want of time, recruits were not vaccinated at all. From the 600,000 French soldiers arose 125,000 small-pox cases with 23,470 deaths. In 1902 vaccination was ordered in the first year of life, with revaccination in the eleventh and twenty-first years, and in the late war only 26 cases of small-pox arose among French soldiers (and 44 among troops from overseas). In the whole of France the small-pox deaths in 1870–74 numbered between 60,000 and 90,000. Germany in 1870 was almost free of small-pox. Her army had been vaccinated and revaccinated compulsorily since 1835, and only 77 cases had come to notice in the 35 years. Cases increased after France was entered, but in all there were only 8465 cases in the German army, with 459 deaths. The Germans suffered more than the French from typhoid and dysentery, so their immunity from small-pox was not due merely to better hygiene. German civilians, not compulsorily vaccinated, suffered heavily, developing some 170,000 cases. Belgium, Switzerland, and England were infected by French refugees. In London 16,000 cases were received in the hospitals of the Metropolitan Asylums Board, as many in the voluntary hospitals and in infirmaries, and as many more were treated at home. In England the first compulsory vaccination Act had been passed in 1853, and although the country suffered severely in the pandemic, the incidence and fatality of small-pox would have been considerably higher had it not been for this Act. The lack of accommodation for small-pox cases in London at the onset of the epidemic led to the rapid opening of three hospitals by the Metropolitan Asylums Board, at Hampstead, Stockwell, and Homerton respectively. Although 16,000 cases were admitted to these hospitals during the epidemic this number represented only one-third of the number for which accommodation was required. The transport of the patients left much to be desired as an ambulance service had not yet been established. Nurses were seldom provided; in most cases the patients travelled alone and occasionally reached the hospital moribund or were accompanied by friends who were not always sober. The danger of a small-pox hospital to the neighbouring inhabitants, which formed the subject of Power's report to the local government board in the next decade, was denied by some authorities, such as Dr. A. Collie, the medical superintendent of the Homerton Hospital, and Dr. Stevenson, the medical officer of health for St. Pancras, but was vigorously asserted by others, and especially by the writer of an editorial in THE LANCET in 1871.

Dr. E. W. GOODALL pointed out that, although the ordinary support of vaccination was statistical, clinical evidence might be even more impressive. As a junior hospital officer he once received a case said to be scarlet fever, and being doubtful had isolated it in a side-room off a ward in which were 22 male scarlet fever cases. The case seemed perhaps to be in the prodromal stage of small-pox, with the very

serious erysipelatoid rash, suggesting exalted virulence. In four hours he concluded that it was too near the scarlet fever cases, and had it removed. That case was dealt with by 26 of the staff of the hospital, all protected by vaccination, and none of them took the disease, but of the 22 men in the ward, exposed for only four hours, and then only indirectly by nurse or doctor contacts, seven, those least well protected by vaccination, developed small-pox.

Sir WILLIAM HAMER said he had at times seen evidence of the aerial convection from small-pox hospitals.

## BRITISH ORTHOPÆDIC ASSOCIATION

THE annual general meeting of this association was held in Edinburgh on Nov. 24th and 25th, under the presidency of Mr. A. S. BLUNDELL BANKART.

### Calcium and Bone

Mr. D. M. GREIG (Edinburgh), speaking on *acute osteomyelitis* and *repair of fracture*, said that bone was at the mercy of its blood-supply and was decalcified by the hyperæmia of infection, injury, neoplasm, and disuse. In acute osteomyelitis the liberated calcium was redeposited within the periosteum to form the new involucrum. The operation of diaphysectomy removed the available calcium and accounted for failure of bone regeneration; it should never be performed until the new bone was well developed. Similarly in fractures, calcium liberated from the broken surfaces was redeposited within the fracture hæmatoma.

Mr. R. I. STIRLING (Edinburgh) said that "fracture serum" contained up to thirty times as much calcium as blood-serum; the calcium was dissolved out of the bone by the acidity of the serum which attained a maximum after five days, and returned to normal within twelve days. Experimental work showed that metal interfered with this normal acidity; the union of fractures was therefore delayed by plating. Ivory and beef-bone did not inhibit acidity; the reaction to stainless steel was not yet investigated. Experiments also showed that union was delayed by any injection of the fracture-hæmatoma or by tearing of its wall; this fact should be considered when treating any fracture by local anæsthesia, early deep massage, or operative reduction.

Mr. R. WATSON JONES (Liverpool) said that if it was true that decalcification was due to acidity, the experimental observation that metal inhibited acidity was at variance with the clinical fact that metal (other than stainless steel) always decalcified adjacent bone. The important practical point was that hyperæmia caused decalcification, and if in a fracture the initial hyperæmia was perpetuated by the repeated trauma of inadequate immobilisation, by infection, or by the irritation of metal or ivory, there was excessive decalcification and delayed or non-union. The only important cause of non-union was inadequate immobilisation.

Mr. J. W. STRUTHERS and Prof. MURRAY DRENNAN (Edinburgh) showed cases of *parathyroid osteodystrophia fibrosa*, and referred to the frequent delay in skeletal recalcification after removal of the parathyroid tumour.

Mr. C. P. STEWART (Edinburgh) said that calcium balance depended on three factors: calcium intake (diet and vitamin-D activity), parathyroid activity (mobilisation of calcium from the bones), and the rate of bone-cell proliferation (local phosphatase activity and hydrogen-ion concentration). The three factors were interrelated, but the first was of greatest importance in rickets and osteomalacia, the second in osteitis fibrosa, and the third in Paget's disease.

Prof. JOHN FRASER (Edinburgh), discussing *lipoid granulomatosis* of bone, said that it was due to an error of lipoid metabolism accounting for excess of cholesterol, which was deposited in blood-vessels and led to granuloma formation. Symptoms were due to local pressure effects, and included diabetes insipidus from pituitary involvement, loosening of the teeth, and extensive bone decalcification. The bone condition was to be differentiated from neoplasm and gumma, and responded well to deep X ray therapy.

### Congenital Abnormalities

Mr. J. BRUCE (Edinburgh) traced the evolution of the foot and said that congenital *anomalies of the first metatarsal*, including shortening, abnormal varus position, and undue mobility, predisposed to strain of the other metatarsals. Compensation of the increased load caused subperiosteal thickening of the metatarsal shafts (Deutschlander's disease). Decomposition resulted in metatarsalgia, spontaneous or "march fracture" of the metatarsal neck, and Köhler's or Freiberg's disease of the metatarsal head. The recent calamitous report of a case in which march fracture was mistaken for sarcoma and the leg was amputated emphasised the necessity for recognition of these disorders.

Mr. STEWART MIDDLETON (Edinburgh), speaking on *arthrogryposis multiplex congenita*, said that in this condition the skeletal muscles were replaced by connective tissue, and the resulting muscle-shortening caused deformities which were very difficult to correct, but had little tendency to relapse. Investigation of experimental herds of sheep in which the disorder was inbred showed that the muscles developed normally but underwent secondary degeneration before birth of the lamb. It was therefore an intra-uterine muscular dystrophy, and he suggested for it the name "myodystrophia fœtalis deformans."

Mr. BRYAN MCFARLAND (Liverpool) said that in human cases there were three objections to the theory of muscular dystrophy: first, there was no progression after birth; secondly, there was rarely any family history; and thirdly, the condition could occur in one limb, the child being otherwise normal.

Mr. MIDDLETON, in reply to the President, said that there was no evidence of a primary neurological lesion.

### Sciatica and Low Back Pain

Mr. W. A. COCHRANE (Edinburgh), reporting the results of dissection of the lumbosacral plexus and the lumbar vertebræ, pointed out that a high or prefixed plexus predisposed to stretching of the nerves. He postulated that the coincidence of such an anatomical variation with an extra presacral vertebra, or with sacralisation of the fifth lumbar transverse process, might explain cases of sciatica.

Mr. WATSON JONES said that anomalies of the lumbar vertebræ were rarely found in sciatica, but muscle spasm, lumbar rigidity, and scoliosis were very common. Treatment by spinal manipulation failed in at least 40 per cent. of cases, but immobilisation by a head-suspension plaster jacket invariably gave relief.

The PRESIDENT said that half the cases of sciatic scoliosis could be cured by manipulation. He had occasionally exposed the interarticular joints by operation, and found the nerve-roots to be very closely in contact with the joints.

Mr. WALTER MERCER (Edinburgh) described an operation for excision of the fifth lumbar transverse

process by an anterior extraperitoneal approach. The bone was much more easily exposed and removed in this way than by the usual posterior approach.

### Fractures and Dislocations

Mr. H. O. CLARKE (Manchester) reported 87 recent fractures of the *carpal scaphoid* treated by immobilisation for periods up to nine months. Bony union was secured in 80 per cent. of cases. Of ten neglected recent fractures (one to three months' duration) treated conservatively, only one united by bone. In such cases he advocated refreshening of the fractured surfaces by operation followed by prolonged immobilisation. If the fracture remained ununited, arthritis of the wrist which could not be relieved by any operation invariably developed.

Mr. ALAN TODD (London) advocated excision of the whole proximal row of carpal bones for old ununited fractures with arthritis of the wrist.

Mr. W. H. TRETHOWAN (London) reported a case of "osteochondritis dissecans of the scaphoid."

Mr. N. DOTT and Mr. STIRLING (Edinburgh) advocated manipulative reduction of *congenital dislocation of the hip*, but said that repeated manipulations impaired the end-result. In cases where the upper lip of the acetabulum was under-developed, they made a new lip by open operation at an early age instead of waiting for redislocation.

## MANCHESTER MEDICAL SOCIETY

A MEETING of this society was held on Nov. 1st, with Dr. C. PAGET LAPAGE, the president, in the chair.

### Empyema

Dr. H. T. ASHBY read a paper on the treatment of empyema in children from a physician's point of view. In childhood, he said, empyema must always be considered with pneumonia, since it rarely follows any other disease. It may follow either alveolar pneumonia or broncho-pneumonia. It is hard to say in what proportion of pneumonias empyema develops, but it is roughly 10 to 12 per cent. The diagnosis is often difficult and the physical signs misleading, but if there is any chance of pus being present in the chest exploration should be done. Radiography is often a help, especially when the empyema is localised or interlobar. In treatment it is important to distinguish between the two types—the syn-pneumonic and the meta-pneumonic. The former is a complication of the pneumonia and arises while the pneumonia is still active. This type commonly follows broncho-pneumonia, especially during an influenza epidemic. Pus forms with great rapidity. In these cases aspiration only should be done, no open operation being attempted until the pneumonia has settled. Meta-pneumonic empyema ought to be operated on as soon as possible. Rib-resection is the best operation, and a tube of adequate size should be inserted. A subsequent rise of temperature generally means insufficient drainage. The continuous suction drainage method is difficult to keep up efficiently. Empyema in infancy is always very serious, but of late improved results have been obtained by injecting Optochin into the pleural cavity after the pus has been aspirated.

### Gallop Rhythm

Dr. J. CRIGHTON BRAMWELL described the clinical features of a consecutive series of 50 patients who exhibited gallop rhythm. Of these 35 had died, 13 were still alive, and 2 had been lost sight of. All except 3 were over forty years of age; and males preponderated over females in the proportion to four to one. Sixty per cent. had a systolic blood pressure of over 160, and of 12 patients whose systolic pressure was below 135, 9 were suffering from myocardial infarction following coronary occlusion. Half the patients in this group were suffering from essential hypertension or chronic Bright's disease. Signs of congestive heart failure were present in 23 cases, and 10 of the patients had complained of cardiac asthma. None had auricular fibrillation. In describing some experimental observations he had made, Dr. Bramwell pointed out that the accessory sound and impulse in true gallop rhythm are always associated with auricular systole. He then discussed the part normally played by the auricle in filling the ventricle. When the heart is beating slowly, he said, ventricular filling takes place chiefly during the first and last phases of diastole; but when the heart-rate is more rapid auricular systole occurs early in diastole. This gives rise to an unusually rapid rate of ventricular filling, and, in patients whose ventricular muscle is lacking in tone, produces a sudden distension of the ventricle and sets the ventricular walls into vibration. These two phenomena are, in his opinion, responsible for producing the impulse and additional sound characteristic of gallop rhythm.

## ULSTER MEDICAL SOCIETY

AT a meeting of this society held on Nov. 16th, Dr. S. B. BOYD CAMPBELL and Dr. T. H. CROZIER reviewed a series of 1153 cases of

### Cardiovascular Disease

These cases comprised all those admitted to the Royal Victoria Hospital, Belfast, over a period of five years. They were systematically investigated as regards ætiology, symptoms, type of lesion, and result of treatment. The infective group (674 cases) was the largest; in it were included rheumatism, syphilis, and subacute bacterial endocarditis. It was of interest to note that there was no history of former acute or subacute rheumatism, tonsillitis, or chorea in 10 per cent. of the cases under the age of 30. Acute rheumatic fever appears to be still a fairly common disease in Belfast and the North of Ireland. Large doses of salicylates and aspirin alternately were advocated in its treatment. If the temperature and joint pains did not rapidly subside the diagnosis should be reconsidered. Speaking of the value of tonsillectomy, Dr. Boyd Campbell said he was favourably impressed by the results in suitable cases of rheumatic endocarditis. Cases had been reported of serious results following the removal of a septic focus such as a tooth and the tonsils, but these dangers had been exaggerated. Of the syphilitic cases, 84·5 per cent. were found between the ages of 40 and 60. Treatment was first given with iodides and mercury, and followed by intravenous injections of arsenic. Smaller doses (0·3–0·45 g. Novarsenobillon) were used in Belfast than at some hospitals, and the results seemed to compare favourably. Prolonged rest in bed for two to three months was also often necessary.

Dr. Crozier gave a description of the statistical tables which had been drawn up from the records, and referred to the use of quinidine in the treatment of auricular fibrillation. A difficulty was to find cases suitable for its use. He seldom met with cases of short duration and with few or no signs of serious cardiac disease.

In the discussion which followed, Prof. W. W. D. THOMSON agreed as to the use of morphia in cardiac disease, particularly coronary thrombosis, on which the opening speakers had laid stress.

# REVIEWS AND NOTICES OF BOOKS

## Otosclerosis

By MACLEOD YEARSLEY, F.R.C.S., formerly Consulting Aural Surgeon to the St. James's Hospital; and Senior Surgeon to the Royal Ear Hospital. London: John Bale, Sons and Danielsson, Ltd. 1933. Pp. 88. 8*s*.

Mr. Yearsley gives, in the first six chapters of this little book, a useful and succinct account of the ideas of numerous authorities about this puzzling affection and states their various views of its pathology and causation. His own theories are set out in the two final chapters. It is his opinion that the clinical and pathological facts of otosclerosis indicate that the disease begins in the brain rather than in the middle ear and labyrinthine capsule, and that there is good presumptive evidence for the hypothesis that the primary and essential changes of otosclerosis are to be found rather in the cortex of the temporo-sphenoidal lobe than in the ear. He admits, however, that no investigations have so far been prosecuted as to the condition of the cortical or other centres in the brain which are involved by this hypothesis, and it is clear that an essential part of the proof is wanting. Under these circumstances the second part of his thesis is of more immediate and practical importance.

Many observers have laid stress on a belief in the necessity for an active agent, usually infective in nature, to start the train of changes characteristic of otosclerosis, and Mr. Yearsley considers that this agent is chronic intestinal toxæmia. Among 100 consecutive cases he found this condition in 83, of which 74 suffered from habitual constipation. He points out that this toxæmia may be hereditary. In his opinion, it is also a cause of chronic progressive deafness of middle age, of presbyacusis, and of sporadic and congenital deaf-birth. During the past few years he has examined many "sporadic" congenital deaf-mutes, and found over 50 per cent. in whom, and also in their mothers, definite evidence of chronic intestinal toxæmia was present.

In the treatment of otosclerosis he holds that measures designed to combat the chronic intestinal toxæmia must be thorough; he has no use for the Plombière method, but employs high lavage of the colon, vaccines, and a preparation of the lactic acid bacillus with the regular use of a purgative. The diet must be frugal, and butcher's meat and eggs avoided. In local treatment Mr. Yearsley puts his faith in the electro-phonoide, of which he is well known as an advocate; a course of 30 sittings, followed after an interval of six weeks by a second course of 20 sittings, and by further courses at varying intervals, is recommended, and speaking generally the treatment should cover a period of one or two years. Regular listening exercises are also held to be of value. Mr. Yearsley has treated 30 otosclerotic patients on these lines, and obtained very marked improvement in 13. He gives details of 6 of these 13 patients in an appendix; 4 of them are still under treatment, and were not seen until 1932; it would be valuable to learn the results of longer observation.

Chronic intestinal toxæmia may be a factor of greater importance than has been recognised, in which case Mr. Yearsley will have done good service in drawing attention to it. The arguments with which he closes this interesting volume should receive the attention for which they call. But the thesis is not an easy one to deal with.

## The Practice of Surgery

Fourth edition. By RUSSELL HOWARD, C.B.E., M.S., F.R.C.S., Surgeon, London Hospital; Senior Surgeon, Poplar Hospital; and ALAN PERRY, M.S., F.R.C.S., Surgeon, London Hospital and Poplar Hospital. London: Edward Arnold and Co. 1933. Pp. 1338. 30*s*.

THIS text-book, now in its fourth edition, is unlike many long popular manuals in that it has not passed through the hands of successive authors. Mr. Perry has caught the spirit of the first edition and has conformed to the original conception with extraordinary skill, so that the book still possesses a unity which is very pleasant in these days of composite authorship. Another satisfactory feature is that the section on diseases of the nose, throat, and ear is not handed over to a specialist for detailed treatment, but the fundamental points to be remembered in this branch of surgery are noted in a short simple statement. Most recent advances in surgery receive mention, such as the ketogenic diet in pyelitis and the perurethral treatment of enlargement of the prostate; we could not find any account of the surgery of bronchiectasis or of sympathetic ganglionectomy. In the treatment of fractures of the lower end of the humerus the student should be told to differentiate between those in children and those in adults. Movement and massage at the end of a week are not indicated in children. Sayre's uncomfortable method of treating a fractured clavicle might have been omitted. The transport of patients with fractured spines is better done in the prone position than supine on a board as recommended. The treatment of such injuries by applying a plaster jacket with the patient suspended face downwards is so successful that a place should be found for it in text-books.

It is a tribute to the care in revision and compilation that so little matter for criticism can be discovered. The book will appeal to a large circle of students because of its simplicity and reasonableness, and because it bears the impress of a great teacher of surgery.

## The Order of the Hospital of St. John of Jerusalem

By H. W. FINCHAM, F.S.A., Knight of Grace of the Order. London: The Grand Priory of the Order. 1933. Pp. 86. Cloth, 7*s*. 6*d*.; paper 3*s*. 6*d*.

THIS story of the Order of the Hospital of St. John of Jerusalem and its Grand Priory of England—to give the institution its full title—is written by the curator of the museum of the Order, who is warden of the Priory church in Clerkenwell and assistant librarian. So from many aspects Mr. Fincham is a well-qualified chronicler. He goes over the ground covered by his previous work under the same title, published nearly 20 years ago and now out of print, but adds full descriptions of important acquisitions to the church and museum which have deepened interest in the ancient buildings. His history of the Order should clear up confusion as to its origin, which, perhaps, would not exist if the familiar title "Knights Hospitallers" were employed, for, in contradistinction to the Knights Templar, the Teutonic Knights, and other knightly Orders, the Order of St. John of Jerusalem was definitely founded with the intention of giving aid to the sick and wounded. There is evidence from various sources that in Jerusalem, after the acceptance of the Christian doctrines by the Roman Empire, a hospital came into being

which was served by a Brotherhood and which, although Christian in origin and doctrine, was respected by the followers of Mahomet. This institution was found in working order by the Crusaders in the eleventh century, and when Godefroy de Bouillon's expedition captured the city, the Brotherhood responsible for the working of the hospital became to this extent military that, in order to minister to the medical needs of the pilgrims to Jerusalem, they fortified and guarded various places along the routes which the pilgrims travelled.

During the 300 years after the first crusade the Hospitallers developed, almost in spite of themselves, the position of a military Order, for in various contests with the Turks, and under various expulsions and refoundations, it was their military prowess that kept them in being. And so in Rhodes, Messina, and finally Malta they built their fortresses, and in Valetta to-day we see the finest and final example of the Hospitallers as a military Order on the Continent. A branch of the Order in England was founded in 1130, acquired much wealth, underwent political vicissitudes, was granted charters and privileges, succeeded to the property in England and Scotland of the Knights Templar, and was under royal patronage until the suppression of the Order by Henry VIII., and the flight of the English Knights to the centre in Malta. At the time of their greatest importance and wealth in England the Priory at Clerkenwell was a scene of royal entertainment, but of the splendid buildings very little remains with the exception of the crypt beneath the choir and a fragment of the round nave of the church. Mr. Fincham says that most of the representations of the buildings found in books are fictitious, although he considers that a print by Wenceslaus Hollar, reproduced in this volume and dated 1656, may be taken as fairly accurate, although it must have been executed 100 years after the dissolution of the Priory, and when most of the buildings had disappeared. Clear descriptions of the fascinating remains are given with illustrations of the buildings and their adornments, and piquant little historical episodes are recounted associated with them. The Order was revived in 1831 in England, and its modern activities are not recorded by the author. They are elsewhere written and familiar to all.

This beautifully produced volume should, for its historical and archæological interest, have an appeal larger than its title suggests.

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**Journal of Pathology and Bacteriology**

THE following papers are discussed in the issue of November, 1933 (Vol. XXXVII., No. 3).—Anaerobic Methods for the Identification of Hæmolytic Streptococci, by R. M. Fry (London). Hæmolytic streptococci produce occasional variants which show hæmolysis only under anaerobic conditions.—A Simple Method for the Preparation of the Specific Soluble Substance of Type I. Pneumococcus, by H. W. Dudley and W. Smith (London).—The Serological Grouping of the Starch-fermenting Strains of *Corynebacterium diphtheriæ*, by Jean Orr Ewing (Oxford). Agglutination distinguishes five types in the starch-fermenting group, all different from those which do not ferment starch.—The Antihæmolytic Titre of Sera of Man and Animals following Staphylococcal Infection, by J. I. Connor and Margot McKie (Melbourne). Memorable infections tend to raise the content of the serum in antihæmolysin beyond that found in the general population.—Further Observations on the Specificity of the Bactericidal Properties of Normal Serum, by M. H. Finkelstein (Edinburgh). Suspensions of bacteria may contain a non-specific substance which inhibits the specific bactericidal actions of normal sera.—The Bactericidal Power of Normal Serum, by J. Gordon (Leeds). Normal bactericidins are not specific.—The Size of the Virus of Louping-ill of Sheep by the Method of Ultrafiltration Analysis, by W. J. Elford and I. A. Galloway (London). About 15–20 micromillimetres, not much larger than the virus of foot-and-mouth disease.—The Growth Phases of Pleuro-pneumonia and Agalactia on Liquid and Solid Media, by J. C. G. Ledingham (London). A complex life-history places these microbes among the actinomycetales.—The Leucocytes of the Pigeon with special reference to a diurnal rhythm, by A. F. B. Shaw (Cairo). The neutrophil of man and the higher apes is replaced by the pseudo-eosinophil with crystalloids in the cytoplasm; these are subject to a diurnal rhythm (highest during the afternoon) similar to that seen in man.—The Functions of Brunner's Glands and the Pyloric End of the Stomach, by H. W. Florey and H. E. Harding (Sheffield). Brunner's glands produce a very alkaline thick mucous secretion which protects the duodenum from the acid gastric juice.—Massive Paravertebral Heterotopia of Bone-marrow in a Case of Acholuric Jaundice, by S. J. Hartfall and M. J. Stewart (Leeds). One of the rare exceptions to the rule that human bone-marrow is enclosed in bone.—Intracranial Tuberculoma, by H. G. Garland and G. Armitage (Leeds). Of 264 intracranial tumours seen post mortem, 34 per cent. were tuberculous; surgeons find about 3 per cent. because tuberculomata rarely cause symptoms before the onset of tuberculous meningitis.—The Islands of Langerhans in 19 Cases of Obesity, by R. F. Ogilvie (Edinburgh). Generally larger than in normal subjects.—The Influence of Sodium Lactate in the Production of Green Discoloration ($H_2O_2$ formation) by Streptococci, by J. Gordon (Leeds).—Renal Aplasia in an Infant, by J. W. S. Blacklock (Glasgow). A female child lived 25 days with kidneys about the size of small beans and histologically undeveloped.—Kidney with Lymphoid Tissue in its substance, by J. W. S. Blacklock (Glasgow). In a child of 18 months.—Pathological Changes observed in Paralysis of the Landry Type: a contribution to the Histology of Neuro-paralytic Accidents complicating Antirabic Treatment, by S. Getzowa, G. Stuart, and K. S. Krikorian (Jerusalem). In two cases following antirabic treatment and one of unknown origin, a widespread degeneration of ganglion cells was found without any inflammatory lesions or fibre destruction.

**The Fight against Disease**

THE autumn issue of the QUARTERLY JOURNAL OF THE RESEARCH DEFENCE SOCIETY (Vol. XXI., No. 4), which can be obtained from the Research Defence Society or from Messrs. Macmillan and Co., London, W.C., contains an interesting article on the annual returns of the Home Office under what is popularly known as the Vivisection Act. A summarising table is included of the Home Office returns under the Act for the years 1928–32 inclusive, and in the face of the details therein given the statements of those who oppose the cause of research must seem surprising. Correspondence between the Society and Mr. Alexis Gunning is also published which is worth reading as showing what the antivivisectionist holds as "the real truth." Mr. Gunning's approaches to the Society are full of courtesy, but his statements in the lay press contain general accusations against laboratories which reveal both ignorance and credulity.

PROCEEDINGS OF THE ROYAL SOCIETY OF MEDICINE (November, Vol. XXVII., No. 1).—An alteration has been introduced in the journal commencing with this number consisting of a different arrangement of the table of contents. The contents will now be arranged according to "papers," "short communications," and "clinical material" instead of under sections as was previously the case. Following this the page numbers are given referring to the report of any special committee and any secretarial announcement. It is also stated that whenever an abstract of a paper is supplied by the author, it will be printed at the head of the paper in English, French, and German for the assistance of continental readers.

THE LANCET

*LONDON: SATURDAY, DECEMBER 2, 1933*

## NEW WORK ON THE PARATHYROIDS

IT is almost exactly a hundred years since RAYNARD, a veterinary surgeon at Lyons, discovered that removal of the thyroid gland in dogs was rapidly fatal. Fifty years later SCHIFF showed that while this was true of cats as well as dogs, it was not true of rabbits and rats. In 1880 SANDSTRÖM, of Upsala, first described the parathyroid bodies and their position in man, and also in dogs and cats and in rabbits, oxen, and horses. The superior pair only was seen by him; 15 years later, in 1895, KOHN discovered the inferior pair. These are embedded in the thyroid body and so differ from the superior pair, which lie on the surface of the gland—usually within its capsule—in dogs and cats, whereas in herbivora they are at some little distance from the gland. Already, in 1891, GLEY had explained the difference in the results of thyroidectomy in carnivorous and herbivorous animals which SCHIFF had observed; in the dog and cat the operation had removed the parathyroids, in the rabbit and rat it had not. The final proof that the acute symptoms set up by thyroidectomy in dogs were due to removal of the parathyroids was furnished in 1900 by VASSALE and GENERALI, who removed the parathyroids so as to leave most of the thyroid. It was generally 48 hours before any symptoms appeared; then twitchings and spasms and other neuromuscular phenomena began and in a few days, generally within a week of the operation, the animals died. The symptoms could be prevented by implantation of parathyroid glands and would return on removal of the graft. The latent period before the onset of symptoms suggested that time was necessary for some poisonous product of metabolism to accumulate in sufficient amount and that the presence of the parathyroids in normal animals prevented this accumulation by destroying the poison. The fact that the severity of the symptoms varies with the activity of protein metabolism seemed to support this idea. They were more severe if the animals were given meat to eat in quantity, less severe if they were not fed at all; they were worse in young growing animals than in those fully grown; they were relieved by bleeding and replacement of the blood by saline. When therefore guanidine and methyl-guanidine were found by KOCH in 1912 in the urine of such animals and also of patients suffering from idiopathic tetany, and were shown to cause symptoms similar to those produced by parathyroidectomy, it was held by some that the poisonous product of protein metabolism which was responsible had been identified (BURNS and PATON, 1915).

Meanwhile another and independent discovery was made by MACCALLUM in 1909: parathyroidectomy causes a shortage of calcium in the blood and brain, and the symptoms it sets up, and those of tetany too, can be stopped by injecting calcium salt. And ever since COLLIP in 1925 succeeded in preparing from the parathyroid glands a material whose injection causes an increase of 50 per cent. or more in the blood calcium, and especially since this material has been on the market as Parathormone, attention has been concentrated on the influence which these small glands have upon the quantity of calcium in circulation. The tetany associated with alkalosis brought on by merely breathing deeply enough to remove significant amounts of carbonic acid, though it does not lower the concentration of calcium in the blood, diminishes the amount of it which is ionised. Similarly in gastric tetany brought on by persistent vomiting and consequent loss of acid the amount of calcium in the blood is not lowered but there is a definite reduction in the amount of essential calcium ion. The parathyroids are necessary because they maintain a sufficient concentration of ionised calcium—not by retaining it and preventing its excretion, but by drawing on the supplies of calcium in the body. The abnormal activity of the gland when irritated by tumour growth is associated with osteoporosis and fragility of the bones, and the condition called osteitis fibrosa presents many of the symptoms of increased parathyroid activity.[1]

But what apparently is a totally different function of the parathyroid has now been discovered by Dr. C. G. IMRIE and those working with him at Sheffield, Dr. MARION BROWN and Dr. CONSTANCE JENKINSON. With Dr. BROWN he began by studying the relation between the amounts of creatine and of phosphoric acid which are combined in muscle—the combination which under the name of phosphagen has come to take so important a place in the chemistry of muscular contraction. By administering creatine to cats the quantity of phosphoric acid which could be recovered from their muscles was increased. It appears therefore that the administration of creatine increases the amount of phosphagen in muscle; but the phosphoric acid necessary for making this extra phosphagen is supplied by the body, so that less phosphate is excreted in the urine. Since the parathyroid in its influence over the distribution of calcium also affects that of phosphoric acid (bone contains more than four times as much calcium as phosphorus, so the change is less conspicuous), the investigators next examined the effect of parathyroid extract on the fixation of creatine in the muscles. The extract by itself does not increase the amount of phosphagen in muscle, nor does it reduce the

[1] For a review of this subject see THE LANCET, Sept. 2nd, 1933, p. 547.

output of phosphates in the urine; if creatine is given with it, however, not only is more of the labile compound that is or behaves like phosphagen found in the muscles, but the retention of phosphate becomes so pronounced that none at all is found in the urine for several hours. If on the other hand the parathyroids are excised, the amount of phosphagen in the muscles is only half what it is in normal animals. This is not due to lack of phosphoric acid, for the amount of free phosphoric acid in the muscles after excision of the parathyroids is correspondingly increased. But the presence of these glands seems to be necessary for its combination with creatine.

Phosphagen is broken down when muscle contracts and the energy liberated is that which is immediately concerned in the energy of contraction. During recovery the phosphagen is reformed, and the influence of the parathyroid on this reformation has been studied by IMRIE and JENKINSON.[2] They find that if the sciatic nerve is tetanised for twenty minutes the excited muscles lose half their phosphagen, but the corresponding amount of additional free phosphoric acid remains in them. In the course of the next hour the phosphagen is gradually reformed and both it and the free phosphoric acid return to their normal values. In cats with tetany following removal of the parathyroids, the amount of phosphagen is to start with 20 per cent. below normal and after stimulation of the motor nerves half the remaining phosphagen is broken down as in normal animals; but after this, even after three hours for recovery, very little of the phosphagen is reformed and very little less free phosphoric acid is to be found. If on the other hand, after removal of the parathyroids, the animal is treated with the active extract of the glands it has the normal amount of phosphagen in its muscles and when this has been reduced by stimulation of the motor nerves it is reformed within an hour as in normal animals. This effect of the extract is detectable after a few hours, so that in one and the same animal tetanic symptoms have been induced by removal of the parathyroids, when it is possible to show first the loss of the power to reform phosphagen and then, five or six hours later, after a dose of the extract, complete recovery of this power.

The rôle of phosphagen in the physiology of muscular contraction seems to be very important, and the influence of the parathyroids upon its formation can hardly be less important. The connexion between this property and the more familiar function of regulating the distribution of calcium, if there is any connexion, is not yet evident. There are grounds for associating the tetany that follows loss of the parathyroids with the resulting low calcium content of the blood; J. LOEB more than thirty years ago showed that the injection of any salt which precipitated calcium leads to twitching of the muscles. But it would be remarkable if the muscular symptoms were not associated also with the impaired formation of the chemical substance which is so closely concerned with the normal function of the muscles. As a matter of fact, cats, the animals with which IMRIE's work was done, are said as a result of experiments in COLLIP's laboratory to show little or nothing of the rise in serum calcium which is seen in dogs treated with the active extract. (After parathyroidectomy they may do so.) It remains to be seen therefore whether the influence of the parathyroids on phosphagen-formation can be demonstrated in other species. The results so far obtained arouse speculation whether it is merely coincidence that methyl-guanidine has been regarded as the toxic agent responsible for the symptoms set up by the loss of these glands and that the new property which has been found in them is concerned with the compound of methyl-guanidine with acetic acid, namely, creatine. We understand that Dr. IMRIE is now endeavouring to apply his data to problems in clinical medicine, and it will be interesting to hear what success he has.

[2] Jour. of Physiol., 1933, lxxix., 218.

## SURGERY OF THE LUNG

WHEN surgery has scored some notable successes in face of medical failure the tendency for a time is towards rapid surgical progress. Such a tendency is now conspicuous in the treatment of pulmonary diseases. By years of endeavour the 10- to 11-rib extrapleural paravertebral thoracoplasty was so far perfected that it came to rank as a standard operation for a certain group of cases. No sooner had this stage been reached than various surgeons began to apply their experience to a further reduction of the mortality and to a stricter limitation of the operation. The earlier results of the localised apical thoracoplasties were somewhat disappointing because collapse of the upper ribs was hindered by the rigid arching of the lower. This was especially evident when large tuberculous cavities had to be collapsed. Further experience showed, however, that by increasing the length of bone resected from each of the upper ribs, a very extensive apical collapse could be secured without grossly impairing the function of the lower lobe.

It was natural to hope that equally good results would be obtained in bronchiectasis, but efforts in this direction proved discouraging, especially when the larger bronchi or the lower lobe were involved. By this time, however, thoracic surgery had received its impetus, and bolder methods such as the excision of the affected lobe or lobes seemed to offer a possible means of curing the disease. At first there were some brilliant results, but a mortality of 50 per cent. seemed much too high for any but the most daring. The idea of lobectomy was right, but the technique required a great deal of improvement. How far this improvement has been attained in the last few years may be gathered from a paper lately written by Mr. J. E. H. ROBERTS and Mr. H. P. NELSON,[1] of St. Bartholomew's Hospital. Using a technique slightly modified from that advocated by BRUNN and further elaborated by SHENSTONE and JANES, they performed lobectomy in ten cases during the eight months May to December, 1932. The

[1] Brit. Jour. Surg., October, 1933, p. 277.

condition of their patients in May, 1933, was a striking testimony to the progress that has been made. To take the possible failures first, one patient died after ten days from a cerebral abscess, but the post-mortem examination gave justifiable grounds for assuming that this had started to develop before the operation. A second died three months after the lobectomy from an influenzal pneumonia. Of the remaining eight, six were healed and free from symptoms, while the other two were back at work, though not entirely cured. The lobectomy in eight of these ten cases was done for bronchiectasis and in the remaining two for carcinoma. ROBERTS and NELSON are strong supporters of the one-stage operation, in which the lobe is cut away and the stump is closed by sutures, as opposed to the two-stage in which the lobe separates as a result of strangulation. One of the great difficulties in lobectomy is the limitation of the infection, and this is effected in the one-stage operation by completely closing the chest wall after the insertion of an air-tight drain into the base of the pleural cavity. This drain is connected by a tube which opens under water in a Woulfe's bottle. The negative pressure in the chest causes the remaining lobe, or lobes, to re-expand and gradually fill up the whole pleural space. The one-stage lobectomy is, moreover, a more truly surgical operation than the two-stage, which necessitates waiting for the lobe to separate by sloughing.

An even more remarkable achievement is reported by EVARTS GRAHAM and J. J. SINGER,[2] who have successfully removed an entire left lung together with several mediastinal tracheo-bronchial glands. In this case the patient had a squamous carcinoma of the bronchus of the upper lobe which projected slightly into the bronchus of the lower lobe. Not only were the whole lung and the glands removed at one stage, but in addition, seven ribs, from the third to the ninth inclusive, were resected from the transverse processes to the anterior axillary line. This was done in order that the soft tissues of the chest wall could collapse against the stump to obliterate, so far as possible, the pleural cavity. Although a small empyema developed in the upper part of the cavity, the wounds were all healed in three weeks. The latest report, four and a half months after the operation, was very satisfactory.

In considering the brilliance of these results—and they are very brilliant—one must be grateful also for the steady advance in methods of anæsthesia. This has done much to enlarge the sphere of surgery; and it will do more.

## VITAMINS IN MILK

THE general opinion that cow's milk is, on the whole, rather a poor source of vitamins is contested by Prof. H. C. SHERMAN in a paper read at the recent annual meeting of the American Public Health Association at Indianapolis.[3] Vitamin A, he points out, is excreted in the milk with remarkable constancy. Provided that it has been previously well fed, a cow may continue to supply vitamin A in normal quantity to her milk from her bodily store even during many months of subsistence on a diet poor in this vitamin. The high survival value for the species of vitamin A supports the view that evolution has in some measure stabilised the vitamin-A content of milk, and that it has further provided for the maintenance of relative constancy in this respect by the development of the body's capacity to store this vitamin in times of abundant intake and to furnish it to the milk from this store when the intake is low. While the vitamin-A content of the milk may be raised by the feeding of cod-liver oil, fresh pasture, or kale, the vitamin-B content is "under physiological control," in the sense that it cannot readily be raised above a normal value by the feeding of more vitamin to the cow, and that when this factor in the milk has been artificially lowered by the feeding of rations very poor in vitamin B, the normal vitamin-B value of the milk is quickly regained as soon as the cow is again placed on a satisfactory diet. The same holds true of vitamin C. Though milk is not an outstandingly rich source of either of these vitamins, it appears to be a more constant and reliable source than has hitherto been appreciated.

The methods of testing milk for vitamin-D values have hitherto involved the employment of experimental diets of such drastic rickets-producing character that only fairly high antirachitic potencies have been demonstrable. With the use of more delicate methods it is now being found that several foods including milk are more important sources of vitamin D than previous work has indicated. It still remains true, however, that in northern latitudes and in cities where the antirachitic value of sunlight is greatly diminished by smokiness of the atmosphere, it is to the advantage of the infant, and possibly of older persons as well, to receive more vitamin D than cow's milk as commonly produced can be depended upon to supply. For this reason a considerable amount of attention is being directed to increasing the vitamin-D content of milk. Three different methods of enrichment may be employed: (1) a vitamin-D concentrate, such as cod-liver oil, may be added directly to the milk; (2) the milk may be subjected to irradiation by carbon arc lights of suitable strength; (3) irradiated yeast or other suitable irradiated material may be added to the diet of the cow. A fourth method, that of irradiating the cow itself, is at present under investigation. Vitamins E and G are difficult to assess, but there is reason to believe that vitamin G, at any rate, is present abundantly in milk at all seasons of the year. Though it is perhaps true that in the United States of America supplementing of the infant's diet with vitamin D is adequate to bring about normal development, it is doubtful whether in this country complete reliance can be placed on milk for the supply of the various other vitamins required by the growing child.

There is a considerable amount of evidence that both vitamins B and C are precariously near the

[2] Jour. Amer. Med. Assoc., Oct. 28th, 1933, p. 1371.
[3] Amer. Jour. Pub. Health, October, 1933, p. 1031.

borderline of sufficiency. It must further be remembered that probably the major proportion of cow's milk fed to infants has been previously treated by heat, drying, or condensing, and that in these processes the vitamin C certainly seems to suffer. How many other factors are requisite for optimum development is not known. The tendency is to analyse nutritive values by animal experimentation in the laboratory, and to record the results in terms of an ever-increasing list of vitamins. No one can doubt the value of this method, and its successes in the past amply justify its continuance in the future. It must, however, be remembered that what holds true for rats and guinea-pigs may not necessarily be true for human infants, and that the clinician is not absolved by the laboratory worker from making his own practical observations. It by no means follows that a more or less synthetic diet with the various vitamins added, in as chemically pure a state as possible, will give the same results as that of fresh cow's milk. No laboratory worker would be prepared to say this. It is for the clinician, guided by the results on animals, to make experiments on the feeding of infants under his care, ascertaining with due precautions on a sufficiently large number of subjects the diet that yields in practice the most satisfactory results.

A very similar view is put forward in a recent paper by Dr. CHALMERS WATSON.[4] Discussing the comparative value of raw and pasteurised milk, he criticises the premature acceptance of much of the present teaching on vitamins, pointing out that we have at the moment insufficient grounds for concluding that the beneficial effect of raw milk on nutrition and growth can be duplicated by the addition to an insufficient dietary of purified vitamin preparations. While Dr. WATSON states the case against vitamins rather strongly and without much supporting evidence, few will be found to disagree with his main thesis that our present knowledge of the nutritive factors in cow's milk is very inadequate.

[4] Scot. Jour. Agric., October, 1933, p. 394.

# ANNOTATIONS

## THE DENTAL ENTRY

Sir Francis Acland put a rule-of-three sum to the Dental Board on Nov. 15th—admitting he had done it before. If before the war, he said, 250 new licentiates a year were needed to maintain a Dentists Register of rather over 5000, how many licentiates (which means a larger number of entrants) would be required to maintain a Register of over 14,000? The answer is 700, and the numbers of actual entrants kept fairly steady in 1927, 1928, and 1929, averaging 210 for those three years. They rose to 275 in 1930, and there was a sudden increase to 406 in 1931, which declined to 360 in 1932, and remained at this figure for 1933. The only possible conclusion from these figures is, he said, that the Dental Board should continue to try to increase the numbers by continuing its policy of awarding bursaries with only such limitation as the limitation of its means requires. The treasurers of the Board, who have the task of selecting those who are to receive bursaries to assist them through their dental training, are finding the difficulty increasing owing to the growth in numbers of those who apply. Help has been refused to nearly half the applicants who came before the Board last September. Of the 51 applications refused 17 would have been considered had it not been for the excessive cost which would have fallen on the funds if help had been given. The selection committee has considered various ways of reducing the number of applicants, such as insisting on the passing of one of the qualifying preliminary examinations of a higher standard; or selecting either by a competitive examination or on the marks obtained in preliminary examinations; or fixing a lower income limit above which no help will be given. After careful consideration a change in practice is suggested. "I would like the Board to consider," said Sir Francis, "whether we should not give notice now that in two years' time we shall probably not be able to make any higher award than at the rate of £30 a year." Exception would be made in the case of sons of dentists and also of mechanics who had undergone sufficient training in dental mechanics to justify the shortening of their courses in dental schools.

## AVERTIN NARCOSIS

AN enormous amount of labour which has hardly yielded commensurate results has been expended by Nils Gyllensvard [1] in studying avertin narcosis. His original aim was to find through animal experiments the possibilities of intravenous drop narcosis with avertin in human beings. The outcome is the definite conclusion that the method cannot safely be applied to clinical practice. In the course of his experiments, however, so many other unsolved problems confronted him that most of the book is taken up with an account of these and his efforts to elucidate them. Each chapter starts with an account of the work previously done in connexion with the subject with which it deals, and then goes on to describe the author's relevant experiments, animal and human. The outcome of the whole is not always clearly stated, and to extract it from the detail of experiments and the pages of tables will tax the patience of the reader. It is worthy of note that when he traces the use of avertin in the world at large the author makes no mention at all of this country, where clinical records have been made which are at least equal in value to any of the continental ones. Questions to which he seeks an answer are the amount of avertin in the body at different depths of narcosis and its concentration in the blood; also the strength of solution which gives the safest and most convenient narcosis. To the last question the answer seems to be, according to this work, 3 per cent., and that is the strength which most workers in this country have, we believe, adopted, if they do not prefer 2½ per cent. For quantitative estimation of avertin in body fluids and organs Gyllensvard employed a method of his own for which he claims accuracy, and he also devised his own method of measuring the depth of narcosis. His determinations with regard to the amount and rapidity of absorption of avertin from the rectum approximate closely to those generally accepted as correct. Children, he finds, do not absorb the drug so well as adults—he does not believe that fat persons need be treated differently from others as regards dosage unless the obesity is really pathological.

[1] Acta Chirurg. Scandinav., 1933, vol. lxx., Supp. xxii.,

It appears that in his practice this author uses avertin in the manner recommended and adopted by those in this country who have had most experience of this anæsthetic. That is to say, he does not aim at full anæsthesia from the avertin, but gets from it always a comfortable and safe condition of sleep which allows the superposition of full narcosis from gas-and-oxygen or ether without the patient being aware of these inhalations and with great reduction in the quantity required of whatever anæsthetic is employed. The chances of undesirable after-effects are reduced in proportion. The great gain is the quiet and pleasant induction of unconsciousness, carried out in bed.

## CEREBRAL SYMPTOMS AT THE ONSET OF ILLNESS IN CHILDREN

CEREBRAL symptoms developing abruptly in children are a source of concern to all who are called upon to treat disease at its onset. The immediate difficulty with which the practitioner is faced is not so much one of treatment as of prognosis, for experience will have taught him that, while in many of these children the symptoms subside completely in a day or two, in others they are premonitory of serious illness. Dr. Abraham Levinson [1] of Chicago, who regards these "acute transitory cerebral manifestations" as ranking "next to croup in the frequency with which they disturb the sleep of the practising physician and the hospital intern," has made a study of 80 children in whom they arose, his objects being in particular to distinguish between those which were purely transitory from those which were not, and to seek for any features which might be characteristic of the former class. His analysis of these cases is of interest, even if it only tends to confirm the opinion of most observers that an exact diagnosis cannot be made from these symptoms at their onset, and that a confident prognosis is injudicious.

Levinson records 80 cases which presented the symptom-complex of "acute cerebral manifestations" as evidenced by any combination of the signs of Brudzinski, Babinski, and Kernig; rigidity of the neck, convulsions, hemiplegia, ptosis, coma, and facial weakness. In 50 of them the symptoms were transitory, their duration varying from 24 to 48 hours. Often their disappearance coincided with the development of signs of an underlying disorder outside the nervous system, while in some children immediate recovery took place. The final diagnoses are tabulated; more than half of them were accounted for by pneumonia and infections of the throat or bronchi, and about one-fifth by otitis. Analysis of the investigations carried out on the 50 cases showed, inter alia, that in all of them there was a leucocytosis, the pressure of the cerebro-spinal fluid was increased, and the blood calcium was normal. The blood-sugar varied considerably, but the average value was a high one. Evidence of reaction in the cerebro-spinal fluid was comparatively rare; in 5 cases only was the cell content raised, but in one it was as high as 50 per c.mm. These transitory symptoms induced by respiratory and other diseases simulate somewhat closely the onset of disorders of the nervous system such as meningitis (meningococcal or tuberculous), encephalitis, epilepsy, and tetany. In considering the question of immediate treatment of children exhibiting this syndrome, the crux of the matter lies in the exclusion of meningococcal meningitis. If this infection is not present, expectant treatment will do no harm and is fully justified, whereas if it is present early diagnosis is essential to safety. Levinson regards the absence of rapid respiration and the presence of petechiæ as valuable signs in early meningitis. The desirability of performing or refraining from lumbar puncture must be decided on these grounds. He suggests that, while there is probably no uniform pathological change which may be considered causative of this symptom-complex, it is likely to be associated with œdema of the brain.

[1] Jour. Amer. Med. Assoc., Sept. 2nd, 1933, p. 765.

## DISEASE-PRODUCING ORGANISMS IN MILK

IN a contribution to the symposium on bread and milk, organised by the Society of Chemical Industry on Nov. 23rd and 24th, Mr. F. C. Minett, D.Sc., and Mr. E. J. Pullinger described their recent bacteriological survey of a large section of the milk-supply of London. The results of the survey are not yet complete, but the search for pathogenic bacteria revealed in a large proportion of the samples of certain classes of milk examined *B. tuberculosis*, *Br. abortus*, and β-hæmolytic streptococci. Milk containing the tubercle bacilli or *Br. abortus* must be regarded as capable of causing disease in man; streptococci of bovine origin, on the other hand, have been proved innocuous to man even in enormous quantities. Their presence in the milk, however, indicates that a certain proportion of the milk, being derived from cows suffering from inflammation of the udder, is likely to have a lower nutritive value than milk produced by healthy cows, while at the same time dairy owners are suffering heavy loss owing to the lowered milk yield of cows thus infected.

Of 26 samples of Certified milk examined none was found to contain tubercle bacilli, but 1 out of 39 Grade A. (T.T.) samples was contaminated with this organism. This proportion agrees fairly closely with that set out by B. S. Rabagliati.[1] Forty-three samples of non-graded raw milk collected from 3000-gallon rail tanks all contained living tubercle bacilli, whilst in the corresponding milks after pasteurisation by the holder method these organisms could not be detected. Minett and Pullinger pointed out that the milk from a cow with a tuberculous udder has been shown to retain its infectivity for guinea-pigs when diluted one in a million times with tubercle-free milk, and held that this fact serves to explain the 100 per cent. contamination of rail tank milks with this organism. The necessity for pasteurisation of non-graded milk when it is collected in large bulk was thus clearly shown. The examination of raw mixed milk from single farms revealed that 21 per cent. of 90 non-graded herds examined were producing milk contaminated with tubercle bacilli. This figure is considerably higher than that of 2 per cent. given by D. R. Wood, or 8·8 per cent. recorded by H. L. Torrance; the differences may depend upon the districts from which the samples were drawn. Seventeen samples of Certified and 31 samples of Grade A. (T.T.) milk contained *Br. abortus*. Of the 43 raw non-graded milks from rail tanks examined 27 showed evidence of contamination with this organism; this figure was regarded as probably too low, since difficulty is often encountered in the isolation of *Br. abortus* from milks heavily contaminated with other organisms. In the corresponding pasteurised milks no brucella could be demonstrated. Of the 90 mixed samples of non-graded milk from individual farms 35 per cent. were found to be contaminated with this organism.

[1] THE LANCET, 1932, ii., 811.

Seventeen samples of Certified milk and 29 samples of Grade A. (T.T.) contained β-hæmolytic streptococci of bovine type, the count reaching as high as 20,000 organisms per c.cm. Subsequently an improved technique revealed the fact that only 2 out of 39 samples of the Grade A. (T.T.) herds remained consistently free from this infection. In these two herds mastitis control measures are being practised by the owners. All raw rail tank supplies were found to contain hæmolytic streptococci, whilst in the corresponding pasteurised samples they were not found.

These investigations emphasise the value of veterinary inspection and tuberculin testing in the production of a milk-supply free of tubercle infection and give strong support to the case for the pasteurisation of non-graded milk, particularly when it is collected in large bulk. The need for control of *Br. abortus* infection is indicated by the widespread contamination particularly of graded milks intended primarily for consumption in the raw state. That control of mastitis is possible is shown by the cleanliness of the two herds where a genuine effort to stamp out this disease has been made, and it is to be hoped that such efforts will be made more generally.

It is unfortunate that even at a conference of experts there should still be voiced a fear that the policy of rendering milk as now produced safe for consumption is incompatible with a campaign for the eradication of disease in dairy herds and the promotion of cleanliness in milking and in transport. Prof. W. W. Jameson, who presided over the conference on the first day, pointed out that the ideal was not only the freeing of cows from diseases communicable to man, but in addition the protection of milk from the time it left the cow until it reached the consumer.

## THE CIRCULAR FOCUS

THE significance of the small solitary circular focus in a tuberculous lung has been variously interpreted, most writers apparently looking upon it as evidence of a primary infection. Prof. A. Fraenkel (Heidelberg), in a paper read last week in his absence by Dr. Jane Walker before the Tuberculosis Association, described the lesion as affording early anatomical and radiological evidence of tuberculous reinfection. The presence of these small foci cannot be demonstrated by percussion or auscultation, nor are they accompanied by any subjective or objective symptoms or signs, and neither their size nor their position is especially characteristic, although they are more commonly found in the right upper lung field. Opportunities for seeing them are rare, but in a case which was reported by Fleischner (Vienna), photographs of which were thrown on the screen, it had been possible to carry out almost simultaneously radiological and anatomical investigations. The healthy carrier of a circular focus which had been followed by X ray was killed in an accident, lung section showing a spherical caseous calcareous structureless lesion, surrounded and isolated by connective tissue. Caseation was absent in the hilum lymph glands and no reaction was present in the neighbouring tissues. The remains of a calcified focus were seen not only at the apex, but also in various other parts of the lung. Prof. Fraenkel believes that the sharply circumscribed concentric focus of this kind must be due to a "special and favourable allergic condition," forming a powerful constitutional factor in resistance against infection. He suggests further the possibility that a hæmatogenous extension can occur from these small scattered foci which are the remains of an early dissemination; indeed, he looks upon the circular focus in adults as a hæmatogenous, monotropic, metastatic structure comparable to the isolated focal formation in bone, kidney, eye, &c. The quiescent circular focus though an early is not the earliest radiological evidence of tuberculous reinfection. Redeker observed "minute fine nodular shadows and the local visualisation of the vessels" as the very first reaction; the circular focus is the first expression of the action of a defence mechanism, a systematic observation of which forms the basis for prognosis and therapy. Artificial pneumothorax used at this stage of the disease has proved a permanent and safe therapeutic measure, and in Prof. Fraenkel's opinion should be employed as soon as the circular focus begins to show signs of activity, even where the sputum is negative.

In the discussion which followed this paper, Dr. F. A. H. Simmonds said that while circular foci might be associated with relapse, yet surely some slight systemic disturbance would usually be noted, such as a mild "influenzal" infection. He also suggested that for these cases a short period of artificial pneumothorax, 9 to 12 months, would probably be sufficient. Dr. W. E. Lloyd, who showed a number of slides, said that most of his cases had had symptoms, and in all but one the circular focus was in the left lung. Dr. S. R. Gloyne said that he had been struck with the assumption in Prof. Fraenkel's paper that the circular focus was always secondary to Ghon's focus. This he thought was sometimes but not always true. He also deprecated the way in which everyone laid stress on allergy in these days, and no one mentioned dosage. The dosage received must have a bearing on morbid anatomy. Prof. S. Lyle Cummins said that while allergy could be postulated by symptoms, he thought it was dangerous to postulate it from X rays. He also disagreed with Prof. Fraenkel's suggestion that circular foci were almost necessarily hæmatogenous. It was probably often but not invariably so. An old healed focus was probably surrounded by a zone of arrested phagocytes containing tubercle bacilli, and even calcareous tissue might contain living organisms. Other speakers disagreed as to the advisability of inducing a pneumothorax. Dr. G. Hebert objected to the term "round focus" which he suspected of being first cousin to the annular shadow. Nearly all his cases of small round foci were associated with hæmoptysis. Most of the cases cleared up, the foci gradually fading.

## BRUNNER'S GLANDS

J. C. Brunner died in 1727, and his glandulæ duodenales are known to every elementary student of histology; not, we fear, so much because of their inherent interest, but because they provide a means of "spotting" a section of duodenum. They have, indeed, not been very interesting in the past because next to nothing was known of their function. Prof. H. W. Florey and Dr. H. E. Harding, of Sheffield, have now published [1] some observations which endow them with considerable medical importance. Brunner's glands are particularly well developed in the rabbit, in which they may also be easily separated from the bile and pancreatic ducts, and most of the experiments recorded were made on that animal with confirmatory findings in cats, guinea-pigs, and rats. The secretion of the glands, which may amount to more than 5 c.cm. in an hour from 10 cm. of duodenum, is a very viscid liquid of the consistency of egg-white, which is highly alkaline from bicarbonates, equivalent

[1] Jour. Path. and Bact., 1933, xxxvii., 431.

to at least one-tenth normal soda. It contains no peptic or starch-splitting ferments, nor was lysozyme detected. The glands are activated by passing dilute hydrochloric acid through the upper part of the duodenum, and it seems clear that they perform the important functions of neutralising the acid of the gastric juice and of mechanically protecting the delicate mucosa of the intestine; appropriate experiments show how easily this may be injured by concentrations of acid well within the possibilities of fluid evacuated from the stomach through the pylorus. It can hardly be a coincidence that peptic ulcers are most frequent in those parts provided with Brunner's glands and their analogues the pyloric gastric glands. And there is definite experimental evidence that unneutralised gastric juice can produce chronic ulcers. The innervation of Brunner's glands still needs working out, but it is possible that worry and other emotional conditions will find here their nexus with peptic ulcer.

## THE ORIGIN OF THE SOCIAL PROBLEM GROUP

THE expression "the social problem group" first appeared in the report of the Departmental Committee on Mental Deficiency, published in 1929.

"Let us assume," this Committee wrote, "that we could segregate as a separate community all the families in this country containing mental defectives of the primary amentia type. We should find that we had collected among them a most interesting social group. It would include, as every one who has extensive practical experience of social service would readily admit, a much larger proportion of insane persons, epileptics, paupers, criminals (especially recidivists), unemployables, habitual slum-dwellers, prostitutes, inebriates, and other social inefficients than would a group of families not containing mental defectives. The overwhelming majority of the families thus collected will belong to that section of the community which we propose to term the 'social problem' or 'sub-normal' group. This group comprises approximately the lowest 10 per cent. in the social scale of most communities."

In an exhaustive study of the development of this group of people, of which the first volume has recently been published,[1] Mr. E. J. Lidbetter seeks to trace its origin and comes to the conclusion that heredity probably plays a large part in its production. Until the latter end of the nineteenth century the machinery of administration of the poor-law in England and Wales made no provision which would enable the family or personal history of persons in receipt of relief to be systematically investigated. There was nothing except the personal recollection of the officer concerned to relate one period of chargeability with a second or subsequent period, no possibility of connecting the chargeability of different adult members of a family with that of an individual, and no means of noticing that successive generations of the same families were intermittently in receipt of relief. It is over 20 years ago that Mr. Lidbetter, as a relieving officer in an East End borough, observed these relationships between his "clients" and began a genealogical study of the paupers in his area. After a few years of single-handed work he was granted financial assistance from the Eugenics Society, and the supervision of his material was undertaken by a research committee, presided over at first by Prof. Cyril Burt and later by Prof. Julian Huxley. A general review of the work was given by Mr. Lidbetter in the Galton lecture of 1932. The volume now issued, which supplies the first detailed account to be published, consists mainly of 26 pedigrees of persons chargeable in 1923, with some brief descriptive notes showing as far as possible the qualities and characteristics of the individuals and the amount of relief, if any, which has been accorded to them. A large degree of assortative mating is revealed, and where there is not the repeated appearance of pronounced and obvious defects, such as insanity and epilepsy, there is too often the perpetuation of the merely low-grade type. A control set of pedigrees of children chosen at random in the schools is also being developed. The pedigrees present form only an instalment of the work and for the discussion of the many problems, which the investigation raises, we are rightly bidden to wait for its completion. For the present Mr. Lidbetter is content to present a sample of his material and to direct some attention to its high lights. This sample is, however, sufficient to demonstrate the patience and industry which he has brought to bear on a most formidable task, and to give promise of the development of a rich source of information.

[1] Heredity and the Social Problem Group. By E. J. Lidbetter. Vol. I. London: Edward Arnold and Co. 1933. Pp. 160. 21s.

## ATROPINE AND ADRENALINE IN HEART-BLOCK

THE action of atropine on the idioventricular rate in the presence of complete heart-block is of some clinical importance, since this drug has been generally held to have little or no accelerating influence. Its effect has often been stated to serve in diagnosing complete block from sinus brachycardia, in which the heart beats slowly but the normal auriculo-ventricular sequence is preserved. Usually between 30 and 40, the idioventricular rate sometimes lies between 40 and 50, and it is then that confusion between the two rhythms is most likely to arise. The observations of Dr. A. R. Gilchrist [1] show that it is precisely under these conditions that the use of atropine as a diagnostic test is most fallacious. He noted the effect of atropine sulphate gr. 1/30th intravenously in ten patients with complete block. (We now know that the smaller doses of atropine which have been customary are not sufficient to paralyse the vagus, which is the aim of atropine administration.) In all cases the ventricular rate was quickened, the increase varying from 1 to 47 beats per minute, or, expressed as a percentage of the initial rate, from 5 per cent. to 96 per cent. The wide variation in the acceleration produced appears to be correlated with the initial rate—the higher this is the greater the acceleration under atropine. It was found that the logarithm of the increase in rate varies more or less in linear fashion with the logarithm of the initial rate. While atropine also caused an increase in the auricular rate, no such relation between the increase and the initial rate was found. In attempting to account for the peculiar ventricular response to atropine, Gilchrist suggests that it is related to the varying site of the lesion in complete heart-block. We have reason to believe that the lower the level in the conducting tissue of the lesion, the slower the idio-ventricular rhythm and the less susceptible to vagus influence the centre of impulse formation. On this supposition, an idioventricular centre of relatively low natural rhythmicity, situated in the lower regions of the conducting tract, would yield a minimum response to atropine.

Gilchrist [2] has also investigated the effect of administering adrenaline subcutaneously in 12 patients with complete heart-block, and has noted an increase in the auricular and the ventricular rates in all cases.

[1] Quart. Jour. Med., October, 1933, p. 483.
[2] Ibid., p. 499.

Contrary to what was found with atropine, the ventricular acceleration was greater when the initial rate was slow, and vice versa; the curve obtained appears to show that the two values vary not in a linear but in a logarithmic manner. It was further shown that doses of the drug between 0·25 and 1·0 c.cm. produced remarkably constant effects, suggesting a possible analogy with enzyme action. The behaviour of the auricles following adrenaline injection was more variable than that of the ventricles, and though acceleration was the rule, no close relation to the initial rate was found. This may be explained by the opposing effects of the direct action of the drug on the auricular muscle and vagal inhibition of the sino-auricular node secondary to an increase in the blood pressure and secondary also to increase in the ventricular rate. Abolition or reduction of the degree of block was never a result of adrenaline injection; on the contrary in one case a 2 to 1 block became complete, and in the same patient a shift in the site of a bundle-branch lesion seemed to be induced.

From the clinical point of view these observations are of importance in confirming the value of adrenaline as a means of raising the ventricular rate in complete heart-block, and further as showing that the effect is most marked when it is most desired—i.e., when the initial rate is slow. They also suggest that the dose of the drug used need not exceed 0·25 c.cm., since a dose of four times this amount appears to have no greater effect.

## SMOKE POLLUTION

THE fourth annual report of the National Smoke Abatement Society records an extension of its work and, what is highly suggestive of its value, a slight increase of financial support. Slowly but surely a general interest in the prevention of atmospheric pollution by smoke is being stimulated. Advisory regional committees have been set up in two new areas, namely, Merseyside and South-west Lancashire, Northumberland and Durham. Unfortunately the Potteries, one of the smokiest areas in the country, has not yet reacted to the blandishments of the Society. Classes for boiler men continue, and the City and Guilds of London Institute is to be asked to issue a national certificate to those who have attended them. To judge by the remarks of the chairman of the Sheffield committee at the recent annual conference of the Society, all is not well with the administration of the Smoke Abatement Act of 1926. New furnaces have been installed which offend every law of combustion, under cover of the phrase that nothing in the Act shall obstruct or interfere with the efficient working of metallurgical processes. At this conference Dr. H. A. Des Voeux, in his presidential address, spoke of the various new and ingenious methods of measuring atmospheric pollution, and pleaded with rural districts and so-called health resorts to supply data in order to furnish a standard of comparison with the more popular centres. Two speakers at the conference put in a timely plea for avoidance of new pollution in connexion with the new housing programme of the five-year plan, for industrial smoke is only a fraction of the total pollution. "Smoke will not disappear," in the words of the report, "unless we continue our work of creating that public opinion and demand out of which alone can come the desired results. To do this work of education and enlightenment effectively requires money; to do it as intensely as we could and to make use of the many opportunities we are now forced to forego requires an income much larger than we have at present." We would therefore point out that, although the Society, under the energetic guidance of Dr. Des Voeux, the chairman, and treasurer, Mr. Alderman W. Melland, and the general secretary, Mr. Arnold Marsh, can report a slight improvement in financial backing, many more subscribing members are needed. And there is ample room for further medical research as to the direct physical ills which may be due to a smoky atmosphere. There remains here much to be learnt.

## SERUM IN WHOOPING-COUGH

IN assessing the value of any method of serum treatment, and especially prophylactic treatment, on purely clinical grounds there is likely to be wide variation according to the criteria of cure, prevention, or modification. Prof. I. Jundell has previously reported [1] the results of giving normal adult serum to 23 children who had been intensively exposed to whooping-cough. Ten of them were in the incubation period and 13 had reached the onset of the spasmodic stage. Of the first group, 8 failed to develop the disease, and in 2 it was of the mildest character. In the other 13 Jundell concluded that the course was favourably influenced as judged by comparison with the illness of untreated elder siblings. The quantity of serum given was from 30 to 140 c.cm. He has now [2] carried out a series of investigations using the serum of adults who were previously treated with two or three injections of whooping-cough vaccine, and who incidentally had all had whooping-cough in childhood. To avoid mass treatment a different method of selection of cases is suggested—namely, to treat only infants of under two years of age who have had intensive exposure from elder brothers or sisters living in the same room throughout the disease, to treat only infants who are in the incubation or earliest stages of the disease, and to treat only if the control child suffers from severe whooping-cough. This greatly limits the material of the investigation, but the course of the disease in the treated and control cases has been accurately charted with reference to the actual number of attacks of coughing, whooping, and vomiting each day. In two instances the control used was a twin brother or sister who had had identical exposure. Sedative drugs were used in the treatment of the control cases but not in the serum-treated ones. Jundell emphasises the fact that the number of his cases is too small to justify any conclusion, except that the method is worth investigating further, but he claims that his plan of assessment allows of the comparison of different series. He also suggests that the investigation might be carried further by using serum from two groups of adults, one having received whooping-cough vaccine while the other has not.

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Dr. H. S. Raper, F.R.S., Brackenbury professor of physiology in the University of Manchester, has been appointed a member of the Medical Research Council in succession to Prof. Edward Mellanby, F.R.S., who resigned his membership on accepting the secretaryship.

Prof. W. W. Jameson has been invited by the Rockefeller Foundation to accompany Dr. F. F. Russell, their medical director, Dr. V. G. Heiser, their representative in the East, and Prof. J. G. Fitzgerald, dean of the Toronto Medical School, on a visit to India for the purpose of examining some of the public health work in that country in which the Foundation are interested. He expects to leave London about Dec. 21st.

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[1] Acta Pædiat., 1928, vii., 319.
[2] Ibid., 1933, xv., 1. Paper read before the International Pædiatric Congress, London, 1933.

# THE PREVENTIVE ASPECTS OF MEDICINE

*A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School*

## VII.—PREVENTABLE DISEASES OF SCHOOL-CHILDREN

(*Concluded from p. 1227*)

### Dormitory Infection

IN a residential school infection may occur by many channels and in various places. It may be carried by milk, or by such vehicles as tableware, pencils, pens, roller towels, or conceivably by books, but usually the infection is wafted in droplet form direct from nasopharynx to nasopharynx in dormitory, common-room, class-room, changing-room, study, dining-room, tuck shop, hall, or chapel. The relative importance may vary with the school, but, except in girls' schools, where cubicles are almost universal, the dormitory is usually the most important. This is only natural, for in bed the carrier of infection and its recipient remain in undisturbed proximity for nine or ten hours, and ventilation is lessened by the stillness of persons, by closure of doors, and often—during high wind, driving rain, or cold—by the closure of windows. Measles and influenza are so infectious that they spread almost as easily in class-rooms as in dormitories, but epidemics of hæmolytic streptococcal infection—e.g., tonsillitis, otitis media, scarlet or rheumatic fever, and pneumococcal infection—should always suggest the most critical examination of dormitories for conditions which favour rapid and easy transmission, and the chief of these conditions are the following: too great proximity of beds, deficient floor area, and deficient ventilation.

#### MINIMAL REQUIREMENTS FOR DORMITORIES

The Board of Education has had for the last 20 years excellent minima for the dormitories of new secondary schools which are as follows:—

*Dormitories.*—At least 3 ft. between beds; floor area not less than 65 sq. ft.; cubic space of 700 cu. ft. Ventilation must be adequate and "through," by arranging the windows on opposite sides of the room.

*Cubicles.*—If partitions be not carried to ceiling, 65 sq. ft. and 700 cu. ft.; if partitions be carried to ceiling, 100 sq. ft. and 1000 cu. ft.

*Sick-rooms.*—Not less than 6 ft. between beds; a window between every two beds. 100 to 120 sq. ft. and 1000 cu. ft. per bed.

#### WINDOW AREA

What is adequate ventilation? One of its indices is the ratio which the "open" window area bears to the floor area. With the ordinary sash window, the potential "open" window is just half the whole "light" window. In an ordinary room the usual standard ratio for light area/floor area is 1/10th, so that with a sash window the window-to-open/floor area is 1/20th. Owing to the proximity of beds to windows in dormitories and the consequent necessity for closing windows on the windward side in rain, the standard ratio for window-to-open of 1/20th is probably not sufficient. Nevertheless you will frequently find dormitories in expensive and well-known schools with ratios as low as 1/40th or even 1/44th. Another point to remember is that windows should reach the top of the room. A large "dead space" is a serious hygienic defect often found in old buildings, especially in those designed for other purposes and adapted for school use.

#### SPACE BETWEEN BEDS

The minimal standard of 3 feet between the edges of beds and 60 feet of floor space for the beds of *healthy* persons originates with Florence Nightingale. The Royal Commission on Barracks of 1861, which her driving force secured, said some solemn truths of which the following are only examples: "In any case overcrowding should utterly be put an end to," and "They have not been aware that if above a certain number of men are placed in a certain cubic space, the lives of some of these men, and the health of others, is certain to be sacrificed."

These standards, as I have pointed out, are minima, but one seldom finds them. The most important is undoubtedly the space between beds. I have been able to show by means of plans (Glover, 1932) how bed-to-bed infection by hæmolytic streptococcus can arise. One plan is of a large dormitory which owing to its width has ample floor and cubic space, yet the beds are only 1 ft. 8 in. apart. There are ample windows on the south side, yet when rain compels closure of these, ventilation depends on small corridor ventilators on the north and is thus not really "cross." The plan shows clear evidence of bed-to-bed infection in 10 cases of scarlet fever, 2 of scarlet fever with rheumatism, 7 of tonsillitis, and 4 of so-called influenza. Epidemiologically, large dormitories are more dangerous than small ones, which somewhat limit the run of infection.

*Head and tailing of beds* is done in some admirable institutions, but generally in those in which the wall space per bed is insufficient. It is usually a disappointing procedure, for reasons which can be understood by considering the child's usual attitude in bed.

The human nostrils point generally downwards, so that in sneezing droplets are propelled, not at right-angles to the long axis of the bed but at a comparatively acute angle—i.e., in the direction of the neighbour's nasopharynx if head and tailing has been adopted and he happened to be turned towards the sneezer. Children tend to curl up in their beds so that the increase in distance between noses is less than expected.

It is doubtful whether head and tailing of beds has any effect beyond perhaps imparting a feeling of satisfaction that at least something has been done. It should be unnecessary if the dormitory complies with the standards quoted, and is of doubtful utility when the sleeping accommodation falls below these standards.

### Otitis Media

Otitis media probably causes more anxiety to school doctors than any other disease, with the possible exception of appendicitis. It is a disease of the highest importance. Not only is it a dangerous disease in itself, but a very large proportion of deafness is due to it, some 30 per cent. of all acquired deafness being due to otitis after measles and some 34 per cent. to otitis after scarlet fever. In public schools, with their rather older age-grouping, tonsillitis appears to be a more frequent cause than either measles or scarlet fever. On an average, some 12 per cent. of scarlet fever cases in hospital develop otitis media as a complication. Here is the daily incidence chart of an epidemic of tonsillitis in a public school in which the nasopharyngitis and tonsillitis epidemic gave rise to otitis media in 12 per cent. of all cases.

Otitis media should be regarded as an infectious disease. I have known 15 per cent. of all the boys in a large preparatory school to be attacked during a measles epidemic, and I know of two instances, one a public and one a preparatory school, where in the absence of measles or scarlet fever, 9 per cent. of all the boys were attacked in a single term. I have known otitis media spread all down one side of a ward of a school sanatorium filled with convalescents from measles.

The importance of dormitory infection in producing such secondary epidemics as those of otitis media is suggested by the fact that whilst the incidence of measles and influenza during 1930 and 1931 has been substantially the same upon boys and girls in the schools participating in the "Inquiry into Epidemics in Schools" of the Medical Research Council, the incidence of serious complications has been significantly lower upon girls than upon boys. Girls have had less than half the incidence of otitis media and pneumonia, and only one-eighth the incidence of sinusitis as compared with the boys. This variation, if it be confirmed by subsequent experience, may have several causes; the greater care the girls receive, their superior discretion when ill, and their better nutrition may all be partial causes, but the most likely cause of the relative immunity of the girls seems to me to be that nearly all the girls sleep in large, well-ventilated cubicles, whilst nearly all the boys sleep in dormitories.

Some practitioners stress the relation of otitis media to swimming baths, but whilst the last to minimise the importance of pure water in such baths, I would point out that the results to date of this inquiry show that by far the highest incidence of otitis media in these schools occurs in the Lent terms when few schools do any swimming.

### Milk

The infection of sore-throat and scarlet fever, as you all know, is not infrequently carried by milk.

Two epidemics of scarlet fever both due to type 2 streptococcus provide a suggestive contrast. One occurred at a children's sanatorium, 305 children being housed in ten wards. The epidemic assumed the typically "explosive" character of milk or water-borne epidemics, and cases occurred simultaneously in all ten wards. Infection was found to have been conveyed by milk, and owing to the open-air conditions there was probably little or no bed-to-bed infection. In the other epidemic affecting three houses of a public school with 132 boarders, the incidence of cases in the separate dormitories, which occurred at intervals corresponding to the incubation period, suggested dormitory infection as a main factor; bed plans gave evidence strongly supporting this view.

Milk used in a residential school should always be pasteurised. For children of this age, pasteurisation has, as far as we know, absolutely no deleterious effect upon the nutritive value.

### Various Preventive Measures

Recent work, especially that by J. G. Cumming (1930) in America, suggests that the *sterilisation of tableware*, including tumblers, is of importance in the prevention of nasopharyngeal infections. Many preventive measures I must omit altogether. Some are self-explanatory, such as:

(*a*) Special propaganda to prevent pupils returning to school after the Christmas holidays infected with influenza or febricula.

(*b*) Temperature taking for three weeks after the beginning of term.

(*c*) Immediate isolation of all pyrexias and catarrhs.

(*d*) No work before breakfast for at least the first six weeks of the term.

(*e*) All hot baths or showers taken during the day or after games to be followed by cold showers.

(*f*) Prevention of chill when watching matches and sports.

(*g*) Adequate provision for drying clothes, uniforms, and boots.

*Closure of Residential Schools.*—You may be asked, either in your examinations or in real life, to decide the question of closure of a residential school on account of an outbreak of infectious disease. The Medical Officers of Schools Association in their Code say:—

"The dispersion of a school on account of an outbreak of infectious disease is always a serious step to take, and should very rarely be required. It may lead to a widespread distribution of the disease.

"In the opinion of the Association a serious outbreak of an infectious disease in a school affords a sufficient justification for the temporary removal of healthy children by their parents or guardians, should they see fit to take this step; but the onus of removing the pupils should rest with the parents, and not with the School Authorities. The latter should rarely go beyond advising parents to take away their children.

"Each case, however, must obviously be decided on its own merits, and if closure is considered necessary, such a step should only be taken after consultation with the local Medical Officer of Health and the Ministry of Health."

The Ministry of Health and the Board of Education say that, "it is only in special and quite exceptional cases that it will be necessary to close a school in the interests of public health."

It is in infectious diseases of the nervous system, of which I have had no time to speak, that the question usually arises in its most acute form. In the case of poliomyelitis the Ministry's official Memorandum states (1932), referring to residential schools, that "the balance of advantage is in favour of *not* closing a school on the appearance of poliomyelitis. If the school be closed any potential infection is more widely distributed (not infrequently in homes containing younger children) and passes beyond such supervision and control as are furnished in a well-equipped residential school conducted on hygienic lines."

There is no time to speak of the contagious diseases, some of which afford excellent examples of preventable diseases of school-children. The enormous reduction in incidence of ringworm of the scalp is one of the triumphs of the school medical service, for which it has not received nearly enough praise. Tinea cruris and ringworm of the feet still haunt our boys' public schools. Conjunctivitis is often spread by *towels* (on the hygiene of which I could say much), but it sometimes, as in a large recent epidemic in elementary schools in Staines, appears to be spread by droplet infection too.

Finally, remember that the school medical officer must not only treat his patients efficiently and devotedly, but with an equal efficiency and zeal apply himself to his preventive duties, a much harder, and often a thankless, task. If we can do little to prevent measles or influenza, we can do a good deal to prevent their secondary complications which render them so menacing. The child who goes through an uncomplicated attack of measles, mumps, or whooping-cough, or the less dangerous chicken-pox or German measles, has at least acquired a lasting immunity to the disease, which may be a useful asset in after life; but the complications, to the prevention of which we have chiefly devoted this hour, will give him nothing but danger—danger to life and danger of lasting disability. "I have

always thought," said Sydenham, "that to have published for the benefit of afflicted mortals any certain method of subduing even the slightest disease was a matter of greater felicity than the riches of a Tantalus or a Croesus." This great felicity awaits those who publish with wisdom and zeal the certain doctrine of the value of sunlight, fresh air, and ample space in preventing sickness in school-children.

J. ALISON GLOVER, O.B.E., M.D., F.R.C.P., D.P.H.
Deputy Senior Medical Officer, Ministry of Health.

# SPECIAL ARTICLES

## MENTAL HEALTH CONFERENCE

THE third biennial conference on mental health, organised by the National Council for Mental Hygiene, was held at the Caxton Hall, Westminster, from Nov. 22nd–24th. It was opened by Prince GEORGE as president of the Council.

### The Place of Mental Health in the Life of the Nation

Sir MAURICE CRAIG (chairman of the Council) described mental hygiene as one more link, and an all-important link, in those matters which concerned the understanding and regulating of life. The importance of preventive medicine on the mental side was not yet fully appreciated. Public bodies devoted much time and money to bodily disease, but many of them sadly neglected the disorders of the emotions. Every man should ask himself whether he was regarding mind disturbance and its treatment in an open-minded way. No excuse, not even a great economic crisis, could be regarded as reasonable ground for closing the eyes to mental suffering. Every advance in the science of medicine emphasised the close relationship between bodily and mental disease. Knowledge of mental hygiene was important in all periods of life, but undoubtedly most of all when dealing with children and adolescents. Character could be moulded for good or ill by environment. A child's sensitivity might become assets for its success or might lead to its downfall. There was a tendency among parents to leave to others what they ought to do themselves. The problem of the day was whether the release of conventional restrictions would lead to great opportunity for right thinking and right doing or end in dismal failure. The man in the street must take the trouble to acquire some knowledge of the mind. While there was danger in imperfect knowledge, there was greater danger in ignorance.

Prof. W. LANGDON BROWN spoke of the correlation between mental disorder and such physical affections as septic foci, heart disease, and disorders of the ductless glands. A very slight organ inferiority would affect the whole mentality of ill-adapted people. The basis of neurosis was loneliness. A sense of inferiority should only be labelled a complex when it led to retreat from social responsibilities. Fear, especially fear of the unknown, was the root of many illnesses. Neurotic illnesses were largely a subconscious defence against a difficult situation. The note of the twentieth century was awareness, and the self-knowledge inculcated by the new psychology would breed a more sympathetic attitude towards the difficulties of others. In so far as people avoided their responsibilities toward the asocial citizen, they too were being asocial.

The Earl of FEVERSHAM (president of the National Association of Probation Officers) said that to appreciate the place of mental ill-health in the life of the nation demanded imagination. Medical and mental science had made great advances during the last quarter of a century. The war had shown that many actions formerly attributed to madness or badness might depend on ill-health due to various factors. The human machine needed constant attention and could not be attended to properly unless fully understood. While physiology had arrived at the status of manhood, mental science was in its infancy. The country had never been so well provided with clinics of all kinds, yet the number of mentally devitalised persons increased steadily, especially among the very young. What could the mental hygiene movement do to save the country from the menace of crime? Experience had shown that 60–70 per cent. of offenders were as likely to respond to right treatment as they were to be made enemies of society by the wrong treatment. The courts did not always take advantage of the powers given them to inquire fully into all the circumstances of the offender, and so continued to mete out treatment that was futile. Good material for want of suitable treatment was allowed to drift into crime. The community as a whole must understand the association between crime and mental and physical health.

Dr. HELEN BOYLE read a paper sent by Sir E. TINDAL-ATKINSON (Director of Public Prosecutions), in which he said that he had at times contemplated a classification of crimes and criminals on a scale related to the mental state of the offender. The expert safe-opener was exercising singularly perfect mental processes, and at the other end of the scale came the truly insane criminal. Between the two lay an uncharted sea of crimes in which mental state was in fact, if not in law, an issue relevant to responsibility. The work of the Council must in due time march with a diminution of crime. Progress might be slow, but the tide crept on. Dr. Boyle added, on her own behalf, that this was a remarkable confession of faith. If throughout the world level-headed understanding coöperation prevailed, there would be less instability of mind, and perhaps even of dollars. It could only be achieved by faith and hard work. The cause of the expert safe-breaker's choice of profession should be sought in his emotional adaptation. In childhood mental hygiene could most fully come into its own.

### Working of the Mental Treatment Act

Mr. L. G. BROCK (chairman of the Board of Control) presided, and introduced Sir HILTON YOUNG (Minister of Health), who outlined the ways in which this Act had extended the facilities for treatment without certification; their value, he said, had been widely realised, but some local authorities were still backward in taking advantage of them. Careful and serious attention should be directed to the position of temporary patients under Section 5. This section constituted an experiment on the success of which might depend the chances of securing at some future date Parliamentary assent to any extension of facilities for treatment without certification. The section represented the first occasion on which Parliament had permitted detention for a considerable time without the usual safeguards. Whereas the returns showed that 11·9 per cent. of the admissions could

have been dealt with on a temporary footing, yet in fact only 1·6 per cent. of these rate-aided patients had been so admitted. A very much higher figure was reached with private patients. This could not be if any serious effort were being made by local authorities to work the section. Forty public mental hospitals had not yet admitted a single temporary patient. If some hospitals could do it, why not all? He blamed the local authorities, the relieving officers, and the certifying doctors, and suggested that magistrates might help by considering whether a patient could be dealt with temporarily.

Dr. J. S. I. SKOTTOWE stated the principles underlying the Act and the general difficulties which had to be overcome. The first principle, he said, was that mental illness affected the patient as an individual, a member of a community. Mental illness was a matter of degree, and the Act recognised this. Local authorities must be the sponsors of local mental health services as well as the managers of mental hospitals. Sound mental health made for sound social health. Dr. Skottowe then described the measures taken at Swansea, which included close liaison with the general hospital and education of the public. Over 20,000 people had visited the mental hospital during the two days in which it had been thrown open. The first result had been a marked increase in the proportion of uncertified cases received. The non-volitional clause in Section 5 raised, he thought, a difficulty in that general practitioners could hardly be expected to form an opinion on the suitability of patients for "temporary" care. Nevertheless the section fulfilled a real need. The Act demanded an immense amount of formalistic clerical work. He did not think that there should be separate accommodation for voluntary and certified cases as this distinction was a legal and not a medical one. General practitioners still hesitated to certify, and so the patient had to go first to a public assistance institution and thence to the mental hospital. Criticism was directed less against the Act than against the small use of it made by many local authorities. Either defective and chronic cases must be removed from the mental hospitals or fresh accommodation must be provided for recoverable cases. Half a dozen regional psychopathic hospitals, associated with universities, would be better than a large number of small admission units attached to old-fashioned mental hospitals.

Dr. J. I. RUSSELL said that it was deplorable to read that the object of the Act was to keep people out of mental hospitals, or that the voluntary class was the uncertifiable class. One of the chief objects of the Act was to make it easier for patients to get in, and most voluntary patients were certifiable. It was morally wrong to certify a patient who claimed the voluntary privileges of the Act. The responsibility for certifying cases unnecessarily rested on general practitioners and relieving officers. Temporary treatment might never, he feared, have a fair trial because the difficulties it involved could be avoided by certification. It would serve admirably for all involuntary patients who did not positively protest against treatment. The approved medical officer ought to receive a fee for his opinion, and not only if he signed the form.

## Sex Problems of Adolescence

Addressing the men's meeting, Dr. E. B. STRAUSS said that the sexual difficulties of adolescence had their origin in earlier years. He traced the growth of sensual feelings and love of the parent, concluding with some practical "do's" and "don'ts" for parents and teachers.

Dr. E. GRAHAM HOWE said that adolescence was the crossing of a bridge from childhood, play, and home to adult life, work, and society, a period of strain upon which additional burdens should not lightly be cast. The child had to learn that in addition to "my law" there was "your law" and "the law," the law of the reality of life. All were rebels at heart, to some extent. To discover "the law" adolescents must "try it on," and prohibitions carried too far only led to rebellion. Whether he stole sex or sugar, a thief was a criticism not so much of himself as of the law which had withheld his needs. All would be well with the adolescent in the end so long as he moved towards the right side of the bridge. Masturbation belonged to the "my law" side, but must not be frustrated by fear. Homosexuality was a normal aspect of the "gang" phase. The two extremes of cruelty and idealism in the growing boy balanced each other and must not be separated into opposite camps of right and wrong. It was better to become good than to be good, and a false idealism or moral phantasy had great dangers. The moral disasters of sexual abuse had been more stressed than the sexual disasters of moral abuse. Reality must be the test of motive. If phantasy were encouraged it might be followed by a reaction of cynical disillusionment. Authority must act as a mediator and not expect too much.

Addressing the women's meeting, Dr. ELIZABETH SLOAN CHESSER said that the first need of the adolescent was good nutrition, and the next was sound sex education. Every child also needed wise love, as distinct from sentimentality, opportunities for self-expression and creative activity, and parental harmony.

Dr. DORIS ODLUM said that adolescence was the time when the child ceased to be content with a phantasy life apart from reality and demanded a love object. The first object was usually of the same sex, and all too often the teacher, through lack of instruction, treated the hero-worship harshly or sarcastically. The adolescent's intense capacity for suffering was seldom realised. The result of unhappiness at this stage was fear of all love objects. The adolescent stood in great need of a friendly adult—who was seldom available—and adults had a clear duty towards youth. The problems of youth were too nearly the problems of the adult for most adults to view them dispassionately, because so few people were psychologically "grown-up."

With the Lady EMMOTT (vice-president, the National Council of Women) in the chair, Dr. BERNARD HART opened a discussion on

## Suicide and Society

Throughout history, he said, society had expressed its disapproval of suicide by various menacing laws and customs. Nevertheless there were exceptions: for instance, the captain who went down with his ship and the widow who committed suttee. The statistics of suicide were appalling. In England and Wales 14 people committed suicide every 24 hours, a yearly incidence of about 1 per 10,000 population, apart from unsuccessful attempts. Males exceeded females in the ratio of 3 : 1, and the highest rate appeared in spring and early summer, and in old age. There was no evidence of a serious amount of child suicide or of a notable increase in recent years. In more than four-fifths there was no real evidence of previous insanity. Suicide was no simple

phenomenon but the final act to which a great number of very disparate factors might ultimately converge. Its frequency seemed to vary inversely with the degree of social condemnation prevailing; this, however, was only a negative factor. Suicide was relatively infrequent in static periods, when habit, convention, and religious precept offered ready means of adaptation, but frequent in periods of disorganisation. Suicide might be regarded as a peculiarly final and definitive adaptation, or as the bankruptcy of all attempts at adaptation. The individual had also to adapt to internal forces, and intrapsychic conflicts were generally found behind the emotional states leading up to suicide. Suicide did not occur as the result of a cold intellectual decision that life was not worth living. While the theory of escape from an intolerable external or internal situation was valid in large degree, it did not cover the whole field of suicide. Psycho-analytical theory put forward a fundamentally different conception, involving positive driving forces towards suicide. The problem required extensive investigation; at present it could only be attacked indirectly by securing adequate treatment of the mentally disordered.

Dr. J. E. NICOLE said that suicide must often spring into the normal mind, and forerunners of many kinds of crime might be found in the mental development of childhood. Childish death wishes were unformed and infantile, and largely or wholly unconscious, but their counterparts in adult life could scarcely be described as unnatural. The precipitating causes of suicide were the intolerable situations, but they proved too much for the individual because of the predisposing causes: hidden stresses and conflicts. The task of education was to convert the "naturally abnormal" tendencies into a socially approved adult behaviour. The process might not go smoothly, and a sense of inferiority and helplessness might be induced; or the tendencies might persist in the unconscious mind with considerable urge; or an aggressive reaction might be evinced. Suicide provided a means of escape from inferiority and symbolised a return to the womb; it might be an aggressive act and a revenge. But suicide probably found its strongest roots in the sense of guilt produced by phantasy satisfaction of repressed urges; it was a self-punishment and an atonement. All three reactions might be reinforced by family influences and situations.

Mr. S. H. HALFORD (Middlesex County Council) quoted Mr. Chapman, the magistrate, who had said that he never gave bail to intellectual men accused of sexual offences because they were so apt to commit suicide. He thought that a hundred years hence painless euthanasia would be available for all mental patients who found life intolerable.

Dr. HART pointed out that a large proportion of actively suicidal patients were likely to recover.—Dr. H. K. SNELL observed that a large number of suicidal attempts were made in a state of intoxication.—Dr. HART thought that alcoholism and suicide were both results of the same cause.

Sir MAURICE CRAIG said that many potential suicides could be saved if they met a sympathetic confidant. It was a delusion to say that people who talked about suicide never did it.

Sir FARQUHAR BUZZARD occupied the chair when the subject of discussion was

## The Neurotic

Dr. T. A. ROSS said that all persons were neurotic sometimes, some often and some seldom. Difficulties might be met calmly and thoughtfully, or the person might after consideration refuse to tackle them at all. The third method, the neurotic, was not good; its ultimate cost was high. The more it was used the more it had to be used, like drink or drugs. People who had been trained to act reasonably could cast out fear even in conditions which produced panic in others. Love for fellowmen would cast out fear even more than confidence in a commander. Fears bred fresh fears, and the multitude of the neurotic's complaints made him tiresome. Fear had once been useful to man but had now no function. The necessary education was by no means easy. The best way of tackling the problem was through the child and the parent. The neurotic was essentially a frightened person and he did not want hectoring but understanding.

Dr. J. R. REES said that the neurotic was really ill, not understanding himself and not understood. Nevertheless much of the best work in the world was done by neurotics; for sheer work and self-discipline they far out-distanced others, though often much of their effort was wasted. The provision of facilities for treatment was still inadequate. The great hope for the future was the establishment by local authorities of clinics under the Mental Treatment Act. It was bad to tell to a neurotic to "pull himself together"—unless he was also told what to get hold of and how to pull. There had been a great advance in recent years in the public attitude to psychotherapy. Mass psychotherapy would solve the problems of the world.

In reply to a question, Dr. Rees said that religious faith, if not dogmatic, might be a great help in recovery from neurosis.

Dr. R. A. NOBLE (Sydney, Australia) commented on the order manifested on such occasions as Armistice Day, and thought that there was much less neurosis in this country than in others. Much mental hygiene work was being done by others than psychotherapists. Much neurosis was due to early malnutrition.

Mr. S. H. HALFORD observed that boys were taught not to make a fuss, while girls were encouraged to hysterical manifestations. The preponderance of female mental patients might be the result of tradition. There were 50 per cent. more women than men in the Middlesex mental hospitals.—Dr. Ross doubted whether there were in fact more female neurotics than males, and Dr. Rees said that the sex numbers were equal at the Institute of Medical Psychology.

A member of the audience, speaking as a patient, said that most doctors treated neurotics in a lackadaisical manner and did not give them the straight talk they needed. For that reason the patients went to irregular practitioners.

Dr. J. C. SMYTHE stressed the paucity of medical attention paid to psychotherapy in the provinces.

Dr. W. ASTON asked if something could not be done under the National Health Insurance scheme.—Dr. Rees replied that most approved societies would not recognise the existence of psychotherapy. The Ministry of Health had recently admitted that psychotherapy was a scientific treatment, which was a beginning.

Dr. DORIS ODLUM said that the National Council had approached many insurance and other societies with no success; they refused to admit its value—although thousands of pounds were being spent yearly on benefit when the recipients could long ago have returned to work if proper psychological treatment had been given them.

In answer to a question about the use of lay psychotherapists, Dr. REES pointed out that much harm could be done by the untrained; the work was

difficult and at times dangerous. There was, however, ample scope for assistance short of actual psychotherapy.

The CHAIRMAN alluded to the valuable psychotherapeutic education the medical student gained from every patient he encountered in hospital.

Mr. NORMAN BIRKETT, K.C., took the chair at the session which discussed

### Punishment or Treatment?

Mr. ALEXANDER PATERSON (Prison Commissioner) said that the problem was eternal and universal, and each country and each century fumbled for a solution. Punishment might be the best treatment for folk of simple mentality. To the average citizen the chief deterrent was the fact of imprisonment rather than any experiences in prison. The prison medical service did an excellent and little-known work and contributed much to psychotherapy. Every day some 200 people were committed to prison: 14 per cent. of these would be on remand; 25 per cent. were sent because they could not or would not pay weekly sums laid down by the court; and 15 per cent. because they could not or would not pay fines. Thus only 45 per cent. were actually committed without the option of a fine. Of these only 6 per cent. had sentences of more than six months during which any kind of treatment could be considered. The treatment of all the varied kinds of prisoners must be very different. American prisons recognised three types: the dangerous man who needed a honeycomb of steel; the type that could be trusted inside but not outside the walls; and the type that could be sent to a lumber camp in the country. Prison was not an ideal place for treatment; it cramped youths at a time when they should be stretched, and the open life of Borstal was very much better for the young. The guiding principles must be: the protection of society, the diagnosis of the individual, and a belief in the possibilities of human nature.

Dr. R. G. GORDON said that doctors and magistrates must necessarily approach the question from opposite points of view; law was concerned with the community but the doctor must think of his patient as an individual. Since British law prided itself on its special care for the liberty of the individual, some compromise might be found between these attitudes. Punishment with the idea of compelling restitution was not easy to devise but might be really useful for young people. Attention must be fixed on the criminal and not on the crime. The delinquent must be caught young. The motivations of crime did not involve any very intricate or deep-seated psychological processes and the ultimate solution was often a matter of common sense. Nevertheless, a knowledge and experience of modern psychology was often essential, and the magistrate ought to have expert help—and that of the child-guidance team rather than of one individual psychotherapist.

Mr. CLAUD MULLINS said that the great problem of the magistrate was his fear lest in doing what was best for the individual he might be encouraging others to "take a chance"; probation officers often begged him to be severe for the sake of others. He pleaded for a new kind of treatment—something between prison and probation—whereby the defiant delinquent could be sent for a month to a special form of detention where he would get plenty of hard work, good food, contact with the outside world, and physical exercises like penal drill in the Army; and thereafter might be put on probation. Prison and probation workers ought to have a statutory right to report to the Bench, without waiting to be asked.

Mr. REGINALD ROPER said that the present system of school punishments was based on tradition rather than any thought-out plan. The first step in trying to find the right treatment was to give up all idea of punishment and try to coöperate with the person to be helped. What was wrong with the courts was the idea that someone was in a position to correct and punish.

Dr. LETITIA FAIRFIELD suggested that medico-legal subjects should have a place in the lawyers' curriculum. In Edinburgh and Glasgow, bar a well as medical students took the course in medical jurisprudence and much greater unanimity of thought was achieved than in this country. A great deal of crime was due to simple gratification of the instincts at the expense of other people; if the offenders were to be treated as interesting patients they would not be helped. An over-sentimentalised attitude was very common and produced a frame of mind extraordinarily difficult to deal with. The young criminal made a very nice calculation as to the consequences of his acts. Dr. Fairfield said her instincts were against corporal punishment, but she would like to get some facts on the subject. What really were the effects of flogging on criminals? A series of case-histories was urgently needed.

Miss AYRE commended the journal of the Howard League to all magistrates.

Captain DAWSON (president of the Chief Constables' Association) said that he and all his colleagues took the greatest interest in juvenile delinquency. Last year in Birkenhead 204 children had been interviewed and only 5 had returned. Nothing had been said about the police side; the police were doing more in a preventive way to keep children out of the prisons than many organisations and they saved the child from the stigma of even having been before the court.

Sir HUMPHRY ROLLESTON was in the chair at the final evening session for the discussion on

### The Gambling Spirit as a National Problem

Mr. F. S. PRESTON (Headmaster of Malvern College) said that the main causes of irresponsible gambling were desire for adventure and escape from an unattractive environment, the acquisitive instinct and an irresponsible and hedonistic attitude to life. Subsidiary causes were the change in home life, the commercialising of modern sport and the greatly increased opportunity for public gambling. The attitude to life to-day in many homes was undisguisedly materialistic and serious thought was evaded. Legal restriction might reduce the opportunities for public gambling, but in no matter had the law been made more ridiculous than in its attempts to restrict betting. The real remedies must be social reform, encouragement of thrift, and education. The National Savings Movement was probably the greatest work in this direction to-day.

Dr. H. CRICHTON MILLER said that the problem was and must always be a matter of degree. The ethical principle involved was that no society could be healthy if the redistribution of wealth was determined by chance and did not represent service, exchange, or gift. In gambling, as in adventure and speculation, man went out to meet the incalculable; in adventure he met it with effort and reason, in speculation with reason only, and in gambling often without either. It had been said that risk-taking for trivial or selfish ends, or risk-taking which involved no intelligence in

careful preparation and avoidance of unnecessary risk, marked a man as a fool and not a hero. The psychological problem of gambling therefore turned on the individual's attitude to the incalculable. The spirit of adventure perhaps tended to manifest itself in inverse ratio to the gambling spirit, but the incalculable had always fascinated the human spirit. The zest it produced was of the nature of tension, and many natures demanded this stimulating tension. The varying reactions to the need indicated the individual's life-attitude. The Narcissan man who regarded himself as the most precious thing in the world would gamble but never adventure. Introverts might take great risks when alone and be cautious in company, while the extravert was just the opposite. There was a close parallel between gambling, alcoholism, and drug addiction; all were an escape from boredom, from a feeling-tone dull and overcast with hopelessness. It might be that the increase in gambling was associated with the decline in alcoholism. Gambling was superior to drug addiction, but was frankly regressive, being associated with two outstanding features of inmaturity: credulity and irresponsibility. The supreme mark of the child mind was to believe a thing because one wanted to believe it, in spite of its incalculability or improbability. The State did nothing to protect the adult credulous, for they did not think they wanted protection and were the majority of the electorate. Powerful vested interests were concerned in their exploitation. The only hope, therefore, lay in breeding and educating a less credulous generation. To develop sound judgment in the young was one of the highest aims of education, but the enterprise often failed through the authoritative and dogmatic action of teachers. A considerable proportion of gambling "sportsmen" were what they were because they had been encouraged to grow up on the games field and in the gymnasium, but not in the classroom, the library, and the chapel. Irresponsibility should be treated as evidence of puerility rather than of wickedness.

The Rev. T. B. SCRUTTON said that gambling was the worst evil in this country to-day. It was wrong because what a man was gambling with was really the children's boots or food. Those who had interesting and varied lives should see that Lazarus at the gate had an interesting and varied life too.

Dr. ALFRED CARVER asked how the gambling spirit could be rightly directed. More of the gambling spirit would mean less of the neurotic spirit.

Dr. W. HEWETSON criticised the attitude of the press towards gambling, holding that sections of the press exploited suggestibility.

Mr. PRESTON, in reply, said he taught that life was an adventure, but not a gamble. The gambling spirit should be directed to carving a niche in life where one could be of service.

At a special session for doctors and medical magistrates, held at the House of the Royal Society of Medicine on Nov. 25th, the chair was taken by Lord HORDER. The subject discussed was

## The Medical Attitude to Crime

Dr. M. HAMBLIN SMITH pointed out that what was punished was not crime but criminals, a heterogenous mass of people whose single common characteristic was that they had offended against the body of conventions known as criminal law. Many penal systems had been tried and had failed, simply because they were systems. All systems of punishment, like all systems of medicine, were self-condemned by their very name, for they supposed the offender to be the constant element, whereas he was the variable one. Crime was merely a symptom, and to name the offence told nothing. The treatment of an offender, like that of a patient, must be personal and individual. A physical examination was important, as certain physical disabilities might predispose to crime. Conduct, however, was always the result of mental life, and a defective body was only an additional handicap. An estimate of the intelligence should be made, for the results of such tests had a high degree of correlation with various features of observed conduct. The results of the tests must always be weighed in connection with other factors. Not more than 5 per cent. of criminals were mentally defective; a far larger proportion were the subject of temperamental defects. The McNaghten criteria worked well in practice and involved no hardship to the accused; the time had not yet come to improve on them. No man should be sentenced for the purpose of investigation: if investigation were needed it should be made on remand. More difficult still was the investigation of the offender's unconscious mind; many offences were certainly due to the operation of unconscious factors, and some cases were curable by psychotherapy. The cure depended, however, on the coöperation of the patient, and there were grave difficulties in the way of treating prisoners. Something might be done by placing an offender on probation with the condition that he should be treated by a psychotherapist. Conceptions of crime were astonishingly clarified by the psycho-analytic theory. Probation should not be merely a way of giving another chance, but should be a serious affair, always combined with measures of social rehabilitation. No case was too trivial for thorough investigation and no court was ever the worse for having full information before it. He hoped to see the day when every court would sit with a psychological assessor.

Dr. R. D. GILLESPIE said that the medical attitude towards crime was becoming increasingly important because it was essentially scientific, whereas the law was largely based on tradition and precedent. A branch of crime which medicine might definitely claim the right to deal with was drug addiction and alcoholism. It was desirable to have some form of treatment for addicts of the nature of lunacy certification. In France, if the family council of half a dozen near relatives signed a document, an alcoholic could be detained for long enough to give him the chance of a cure. A third problem of strictly medical concern was that of suicide, and a fourth was the group of sexual offenders. In an ideal state every offender would have a psychiatric examination. Valuable results from such an examination could be obtained in the case of motor drivers, for instance.

Sir MAURICE CRAIG said that the protection of society must be combined with the care of the individual; it would be a great benefit if the legal profession, while realising their obligation to society, would try to deal with the criminal instead of the crime.

Dr. ALFRED CARVER said he feared that the public were beginning to think that doctors in the witness box loaded the scales in favour of the accused and against justice, partly on account of the new psychology and partly from motives of personal interest.

Dr. R. A. NOBLE said that surprising interest and value had resulted at Yale from combined seminars of men studying psychology and men studying law, and suggested that much valuable after-care work could be done in preparing the home and the parents to meet the problems of a delinquent child who was returned to them.

Dr. M. J. NOLAN expressed his appreciation of the work done by the Conference and the Council.

Dr. HENRIETTA TREVITHICK deprecated strongly the practice of making little girls stand up on a chair in court and explain in full detail what had been done to them by a sexual offender. She thought their depositions ought to be taken privately, preferably by a woman magistrate who would treat them like a mother. She also regretted the appearance in open court of alcholics, often gentlewomen, and the powerlessness of magistrates to help them. She welcomed psychological training for magistrates, if it were the right training.

Dr. J. R. REES said that the Institute of Medical Psychology had run a number of successful discussion groups for probation officers. It also reported to magistrates, and was able to treat a small proportion of cases. Of these—all difficult cases—60 per cent. of the adults and 70 per cent. of the children had remained well. This showed that much could be done by the psychological approach. If only magistrates would worry the Home Office enough, the urgent need for a panel of advisory medical and educational psychologists would soon be met.

Dr. T. RUSHBROOKE commented on the conflicting medical evidence often heard in court.

Prof. MILLAIS CULPIN urged recognition of the fact that dissemination of psychological knowledge was necessary for the protection of the public quite as much as for the sake of the criminal. He paid a tribute to the insight and wisdom of police.

The CHAIRMAN said that doctors were being seriously worried to go to court and use their influence on behalf of their patients; the public were alleging that as a profession doctors were too apt to give their assistance a little recklessly in favour of the alleged delinquent and against the public interest.

Dr. HAMBLIN SMITH, in reply, said that he had seen the most terrible things done in court by the medical witness and such exhibitions threw suspicion on the whole subject of psychological medicine. Happily the evidence of medical officers of prisons was always regarded as absolutely impartial. The provision of expert assistance was purely a matter of expense, and the difficulties could be overcome if the magistrates were determined enough. He regarded the present method of appointment of magistrates as a great public danger.

## THE FIGHT AGAINST THE SLUMS IN LIVERPOOL

MEDICAL officers of health have welcomed the call of Sir Hilton Young to abolish the slums. Many local authorities have made considerable headway with their clearance schemes, and the *British Weekly*, in a supplement published on Nov. 23rd, gave an interesting illustrated survey of the steps that are being taken in various parts of the country. Dr. W. M. Frazer, medical officer of health of Liverpool, describes the three methods applied by his local authority to houses marked for demolition. When a number of insanitary houses are grouped together in narrow streets or courts and badly arranged in relation to each other, a clean sweep is made. The authority then either purchases the land and rehouses some of the inhabitants in tenements, or rehouses them elsewhere and notifies the owners that they must demolish. A second method is to form an "improvement area" and this is done with larger areas in which good property is mingled with bad. Some houses are demolished, others are repaired, and by-laws are enforced to prevent overcrowding and ensure proper housing conditions in the future. The third method is to demolish sporadic insanitary houses. One of the principal difficulties in the way of clearance is the provision of alternative accommodation. In a large district like Liverpool rehousing is the responsibility of a separate housing department. After the medical officer of health has taken the proper steps for demolition, the director of housing, under the control of the housing committee, constructs new accommodation. He works in close coöperation with those responsible for the town-planning scheme.

Many of the difficulties in the way of abolishing the slums are legal. Representations and reports have to be made to the committee concerned; notices have to be served on owners of property and other interested parties; evidence must be marshalled for the Ministry of Health inquiry, and if land has to be purchased, valuations and sometimes arbitrations have to be undertaken. The capital expenditure on rehousing may be very large, but owners of property are not always satisfied with the compensation offered them and legal action is not uncommon. One celebrated case, the Minister of Health against the King, ex-parte Jaffe (1930), was brought on the ground that no lay-out plan had been prepared. It went through the Divisional Court and the Court of Appeal to the House of Lords, where the scheme was finally upheld and it was decided that a scheme need not be propounded in a cut and dried form so long as the Minister has the essential facts in front of him.

Repairs are, as Dr. Frazer points out, essential in order to prevent the remaining property from falling into the slum category after the clearance scheme is completed. Local authorities have ample powers under the Public Health and Housing Acts to enforce repairs, and must appoint sufficient staff to undertake the work thoroughly. In connexion with repairs the order of the day is eternal vigilance. In Liverpool last year nearly 58,000 notices were served on owners requiring defects in dwelling-houses to be remedied. Reconditioning, a more complete and expensive form of repairs with some improvements, renders a house really suitable for human habitation at one stroke, and thus has obvious advantages. It was recommended by the Moyne Committee only for houses with an estimated life of 20 years.

### LARGE HOUSING ESTATES

Mr. L. H. Keay, the director of housing at Liverpool, considers that the ideal method of housing the working-classes is in single-family houses of comparatively low density on estates with quick and convenient transport to the commercial areas of the town. This means the complete development of model estates. Only failure, he thinks, will result from the segregation of one particular class in one area. The large estate must be looked upon as an entire township, complete with its churches, schools, libraries, public hall, and shops, around which the social life of the tenants will centre. Failure to provide these amenities has often sent many of the new tenants drifting back to the town areas. For rehousing schemes in town areas high-storied flats are essential and must be concentrated on one large site. This means the entire rearrangement of an area in order to leave room for gardens and recreation grounds. Mr. Keay speaks with appreciation of the Karl Marx Hof in Vienna, which is built on a site of 45 acres, only 14 per cent. of which is covered by building. The scheme is a community in itself, with

communal kindergarten, library, dental and mental clinics, post-office, baths, and laundries. The architecture is in the modern cubical style. It would be quite easy to equal if not to surpass the Vienna experiment in this country, Mr. Keay declares, if the housing problem were tackled on sufficiently comprehensive lines. Liverpool sets a splendid example; it is to be hoped that every local authority will before long carry out a scheme which will make full use of the opportunities given to it by the new Housing Act and the Town and Country Planning Act. The *British Weekly* is to be congratulated on a thoroughly useful and interesting symposium.

## UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

### MEDICAL RELIEF FOR UNEMPLOYED

THE American system of subsidised medical relief has been inaugurated and, although it takes its origin under the Emergency Relief Administration, there are few who doubt that it represents the beginning of a permanent system of medical relief. Rules and Regulations No. 7 govern "medical care provided in the home to recipients of unemployment relief." The preamble states: "The conservation and maintenance of the public health is a primary function of our Government. In this emergency . . . ." Emphasis is laid upon the conservation of the natural relationship between the patient and his doctor or dentist or nurse. Money is made available for medical care in the home, for bedside nursing care, and for emergency dental care. No bills for hospitalisation are to be incurred, for the Federal Administration regards hospitalisation as a local responsibility, even when the person to be hospitalised is a "transient." As the administration is establishing camps for transients in an effort to bring to an end their aimless wandering in freight cars and by hitch-hiking, and yet is making no provision for hospitalisation of the campers, an awkward situation will be created for those in charge of camps when a transient is smitten with acute appendicitis. From the Federal point of view the need for precaution is apparent, for even the huge sums set aside would soon melt away if medical relief were not hedged about with restrictions.

Medical care is to be provided at an agreed rate and is to be of the same type as that furnished to private patients but not excessive in amount. Such care shall only be available when authorised through regular relief channels. Authorisations for medical care for acute illness will be limited to a definite period and a maximum expenditure or number of visits. Additional medical care may however be authorised after investigation. Obstetric care in the home will be authorised and will include prenatal as well as postnatal care. Medical care for chronic illness will be authorised on a limited basis.

"Medical care shall not ordinarily be authorised . . . for conditions that do not cause acute suffering, interfere with earning capacity, endanger life, or threaten some permanent new handicap."

Expensive drugs must not be ordered except after consultation with a local medical advisory committee. This committee is to be designated by the State and local medical organisations. These medical organisations will make recommendation as to the fee schedules, but the latter will be finally approved by the State relief administrator. All regularly licenced physicians may participate in working this scheme for medical relief. The local relief agent will keep on file a list of physicians who have agreed in writing to abide by the conditions and restrictions of the regulations.

All this is probably "State medicine," but the conditions are most auspicious for its adoption. Practitioners of medicine who for three years have collected only a small percentage of their bills will not turn away from the security of payment by the State even at reduced rates. Moreover, the guarantee of patient-physician relationship and the establishment of medical advisory committees designated by the regular medical organisations meets in advance some of the most pungent criticisms that have been levelled against State medicine.

## SCOTLAND

(FROM OUR OWN CORRESPONDENT)

### MORAL PROTECTION OF THE CHILD

MEMBERS of Edinburgh women's organisations who have been considering this subject lately heard an address by Dr. W. R. D. Fairbairn, lecturer in psychology in Edinburgh University, on the problem of child assault. He considered it high time that public opinion was better informed, so that adequate measures for the protection of children of both sexes might be devised. The effect of assault upon the victim might be to provoke either bad habits or nervous symptoms, or both. In after-treatment it was best as a rule to allow the child to remain at home, unless the parents were unsatisfactory, and it was a mistake to encourage the child to forget the occurrence by making the subject taboo. He or she must be given a chance of working off the emotions aroused, and so far as possible an objective and unemotional attitude to the unfortunate experience be promoted. As for the offender, Dr. Fairbairn's experience was that penal methods had neither preventive nor remedial value. Most, if not all, adult offenders who committed sexual assaults upon children were abnormal and should be treated along medical rather than punitive lines.

At another meeting Mr. R. Macgregor Mitchell, K.C., suggested the advisability of extending the Habitual Crime Act of 1908 to make it apply to sexual offences against children and young persons. He commented on the evil effects of the slums. Dr. T. M. Murray Lyon said that parents were responsible for most of the aberrations of children. Ignorance of some of the facts was a necessary safeguard of youth; and though some sex instruction should be given, it must be individual. Dr. Drummond Shiels referred to the immense value of such organisations as the boy scouts and the girl guides, and pointed out that the choice to-day was between wrong knowledge and right knowledge. The child could not be told all about sex, but whatever he was told should be substantially true. Dr. D. K. Henderson, professor of psychiatry in the University, moved a resolution urging the Secretary of State to introduce legislation amending the law of Scotland governing sexual offences against children and young persons. He pleaded that the same consideration should be extended to criminal offenders as was now extended to the mentally ill. If these offenders could be caught young, there might be some hope of treatment. He had been surprised to find that in the great majority of cases alcohol played an important part in

determining criminal conduct. He also commented on the futility of the present punitive system.

EFFECTS OF REHOUSING SCHEMES

Dr. A. K. Chalmers, formerly medical officer of health for Glasgow, recently read an important paper before the Glasgow Royal Philosophical Society, in which he said that public opinion seemed to be completely formed on the need for slum clearance and rehousing schemes. Experience was teaching, he said, that a very large proportion of the inhabitants of slum areas willingly and cheerfully react to the improved conditions provided by rehousing schemes; that some more respond to methods of re-education in orderly domestic ways; while only a fraction remain for whose particular disabilities a solvent is still needed. The continued existence of the slum had hitherto shielded this refractory or "elusive" group from every form of stimulus to social betterment, and extinction of that shelter would open up new avenues of approach, and suggest different and specialised forms of treatment.

PUBLIC HEALTH AND FOOD PREPARATION

Prof. P. S. Lelean, of the public health department of Edinburgh University, this year presented the diplomas and certificates to the students at the Edinburgh College of Domestic Science (Atholl-crescent). In considering the question of race betterment, he said, despite temporary modern trends, there was no doubt that the big work of the future depended on the motherhood of all countries. Progress was apparent, and that progress would become more definite when we reached the point at which no girl left school without a certificate of efficiency in domestic science. Atholl-crescent was not only training those who were prepared to accept this trust of maternity, but was also educating those who would so train the coming generation that the nation would no longer face the disgrace of a state of affairs whereby 97 per 1000 children born in Scottish towns were dead before the year was out. Miss Wingfield, the principal, said they had enrolled this term 248 new students, just as many as they could accommodate. There were 498 students now taking full courses; 150 taking shorter courses, and a few hundred more coming in for odd lessons and lectures. A feature of the prize-giving was the absence of a large number of the students who had already taken up posts such as those of warden, teacher, matron, canteen superintendent, or cook.

## IRELAND

(FROM OUR OWN CORRESPONDENT)

LUNACY CONDITIONS IN IRELAND

Mr. S. T. O'Kelly, Minister for Local Government and Public Health, in a speech made on opening a new mental hospital in County Louth, referred to the possibility of reforms in the law and administration of lunacy. He pointed out that the number of persons detained in mental hospitals, not only in Ireland but in other countries, was steadily increasing. He did not, however, regard this as altogether due to an increase in insanity. There was good reason to think that the boundary lines of what constituted mental disorders had changed from decade to decade, and that to-day many were cared for at the public expense who formerly would have been left to shift or themselves. The mental hospital must become what its name implied—a real hospital—and it must stand more and more in the public estimation as a hospital and not as a place of detention. The present procedure for admission must be altered. At present most patients were admitted as if they were criminals. He would like to see established a system of voluntary admission which would dispense with certification, and he would like to see considerable simplification of procedure in the cases in which the patients had ceased to be capable of expressing a wish. He thought policy ought to move on such lines, and if they found general approval, he had no doubt time would be found for the necessary legislation. He added that the mental hospitals were the only institutions for mental defectives, and many who were defective from birth or from an early age could be managed at home and taught some handicraft. But some would require to be sent to institutions, and they did not improve by being mixed with the ordinary patients of a mental hospital. What was needed was a farm colony on which they could be taught to be practically self-supporting.

## MEDICINE AND THE LAW

### Nursing-home's Reputation Vindicated

THE result of the appeal in Powell *v.* Streatham Manor Nursing Home is to reverse the substantial award of damages against the defendants for their alleged negligence in looking after one of their patients. The judgment is legally important, as will readily be seen, inasmuch as it shows the Court of Appeal taking the unusual step of over-ruling the trial judge on issues of fact. It is naturally of extreme value to the nursing-home and its staff; the original verdict of negligence, had it stood, was most damaging to their good name. The brief story of the case is that Mrs. Powell entered the home in January, 1930, to undergo hysterectomy. She (and her husband with her) claimed damages for two acts of alleged carelessness in that (1) Nurse A so negligently attempted to pass a catheter into her as to perforate her bladder, and (2) Nurse B negligently dropped her when attempting to lift her single-handed on to the bed-pan, thereby causing an umbilical hernia and bursting the stitches of her operation wound. Mr. Justice Horridge tried the case (without a jury) for several days. He found for the plaintiffs on the first, but not on the second, allegation of negligence, and he awarded the husband £977 for his special damage and expense, and the wife £2500 for her pain and suffering. It was obviously an award which the defendants must challenge at all costs; it is therefore satisfactory that Lord Justice Slesser should have been able to say, when reviewing the case, that on a proper examination of the evidence they stood acquitted of all negligence or impropriety.

The patient, it seems, was taken into the home on favourable terms; the genesis of her complaint of negligence synchronised, the Court of Appeal was inclined to think, with the delivery of a demand for payment of a small sum for fees; the allegation about the misuse of the catheter was certainly not prompt and clear. The nursing-home witnesses said at the trial that they had none but rubber catheters in the home. There was substantial medical evidence that, if a rubber catheter were used, the bladder could not have been perforated. Mr. Comyns Berkeley, consulting obstetric surgeon at the Middlesex Hospital, said he had never heard of any sort of catheter perforating the bladder. He offered another possible

explanation when he stated that he had performed hysterectomy possibly some 5000 times and admitted that he had more than once injured the bladder during the operation. Mr. S. G. MacDonald, gynæcologist at the West London Hospital, stated that he was called in perhaps two or three times a year in cases where the operation had caused such an injury. The Court of Appeal, obviously impressed by this evidence of how the bladder might have been perforated without any negligence, turned to the plaintiff's own account of what had occurred. Mrs. Powell said that while Nurse A was passing the catheter she felt great pain and knew it was not being done in the right way; she protested, but Nurse A said "shut up, Mrs. Powell, I have done this passing of a catheter before." Mrs. Powell says she rejoined, "Yes, but it will be the last," whereupon, according to her story, Nurse A lost her temper and with a violent and brutal prod forced the catheter, injuring the bladder. The Master of the Rolls refused to believe that Nurse A, stated by the doctors to be one of the best nurses to be obtained, a careful nurse of long experience, could have been guilty of such callous brutality. Lord Hanworth proceeded to emphasise certain important dates. Mrs. Powell left the home on Feb. 12th, 1930. More than two years later a letter was written to her on behalf of the home to collect an outstanding debt of 8 guineas, with a hint of legal proceedings to enforce payment. Her husband replied briefly that he was making the nursing-home a satisfactory offer. This offer was a letter to the defendants to say that a legacy of £500 was coming to him; he had a heavy bill of some £300 to pay a doctor; when the legacy was received he would pay the doctor and then settle the defendants' account. The Court of Appeal found it significant that, though Mr. Powell's letter did assert that his wife's stay in the house had been prolonged by the carelessness of a night nurse (apparently a reference to the alleged incidents of careless lifting the patient to which the hernia was attributed), he said not a word about the catheter and the perforated bladder. Lord Hanworth found it impossible to believe that the husband could have written such a letter (with his wife's knowledge as was admitted) if he and she then believed they had suffered an injury costing them nearly £1000 through the brutality of Nurse A. The next move from the plaintiff's side was a solicitor's letter inviting the defendants to admit negligence. The defendant's solicitor asked what the negligence was. Then for the first time, on April 1st, 1932, there was definitely formulated (in a letter from plaintiff's solicitor) the allegation that the bladder had been perforated by the negligent application of a catheter. The Master of the Rolls said it was startling to think that the claim remained quiescent for over two years until the demand for 8 guineas was made. Another noteworthy fact was that Mrs. Powell had visited the home not long after her discharge therefrom to ask advice as to the use of some appliance; this did not look as though her mind was then full of her callous ill-treatment.

The claim for the hernia incident had been dismissed by Mr. Justice Horridge at the trial, but Lord Hanworth went over the relevant evidence again because its non-acceptance threw light upon Mrs. Powell's credibility. Then, returning to the catheter incident, he examined the conflict of oral testimony and alluded to the "very useful" evidence of the written day-and-night reports of the nurses. This documentary evidence was fatal to the plaintiff's claim and he declined to believe that the entries had been wickedly inserted to bolster up a false case by the nurses. Having come to the conclusion that the nursing-home was not guilty of "this terrible negligence," he gave judgment that the appeal must be allowed. Lord Justice Slesser agreed; he laid stress on the undisputed statements that before the operation Mrs. Powell was suffering from emotional attacks which she called brainstorms and for which she was being given morphia. He gave other reasons for not accepting her version and he found the evidence of her own doctor (who had performed the operation) unreliable and not to be accepted in any particular where it was in conflict with that of the defendants' witnesses. Lord Justice Romer concurred, adding fresh instances of inconsistency between Mrs. Powell's testimony and the written documents. The three members of the Court were thus unanimous, but it is possible that the case may be taken to a higher tribunal, since it can certainly be represented as an unusual intervention by the Court of Appeal in view of the definite findings of fact in the court below.

# THE SERVICES

## ROYAL NAVAL MEDICAL SERVICE.

THE following appointments have been notified: Surg. Comdrs. J. F. H. Gaussen to *Vivid*, for Plymouth Hospital; P. L. Gibson to *Victory*, for Haslar Hospital; R. W. Nesbitt to *Pembroke*, for R.M. Infirmary, Chatham; G. R. McCowen to *Victory*, for R.N.B.; R. J. Inman to *Osprey*; E. B. Kelly to *Renown*; H. B. Parker to *Pembroke*, for Chatham Hospital; and J. R. Brennan to *York*.

Surg. Lt. Comdrs. F. C. M. Bamford to *Ganges*, for R.N. Sick Quarters, Shotley; and J. V. Williams to *Despatch*.

Surg Lts. A. K. Stevenson to *Curacoa*; and M. H. Adams to *Alecto*.

Surg. Lt. (D) F. R. McN. Willis to *Pembroke* for R.N.B.

### ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. T. C. Stevenson has been promoted to Surg. Lt. Comdr.

## ARMY MEDICAL SERVICES

Maj.-Gen. H. E. M. Douglas, V.C., late R.A.M.C., half-pay list, retires on retd. pay.

## ROYAL ARMY MEDICAL CORPS

Capt. W. A. G. Bell relinquishes his temp. commn.

The undermentioned Lts. (on prob.) are confirmed in their rank: J. N. Concannon, J. P. Douglas, and C. King.

### TERRITORIAL ARMY

Maj. J. A. C. Scott to be Lt.-Col.

H. Temkin and J. W. Laird to be Lts.

### TERRITORIAL ARMY RESERVE OF OFFICERS

Maj. E. V. Connellan having attained the age-limit retires and retains his rank, with permission to wear the prescribed uniform.

Capt. E. D. Ellis having attained the age-limit relinquishes his commn. and retains his rank.

## INDIAN MEDICAL SERVICE

Lt.-Col. (temp. Maj.-Gen.) Sir Leonard Rogers, retd., relinquishes the temp. rank of Maj.-Gen. on ceasing to be empld., and is granted the hon. rank of Maj.-Gen.

Lt.-Col. F. B. Shettle retires.

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ENLARGEMENT OF NORTH LONSDALE HOSPITAL.—Commander C. W. Craven recently opened the new Pritchard memorial wing which has been erected with a legacy of £3626 from the late Miss F. M. Blower. The new building contains a ward of 14 beds and one of a single bed with the necessary services.

# GENERAL MEDICAL COUNCIL

## PRESIDENT'S ADDRESS

IN opening the 138th session on Nov. 28th, Sir Norman Walker, the president, said: "Our youngest member, Dr. Christine Murrell, died before she had taken her seat among us. I had not the privilege of her acquaintance, but from what I learn from those who had, I am sure she would have been a really valuable colleague. We miss to-day two familiar faces. We bade last May a formal farewell to Sir Donald MacAlister. None of us knew the Council without him, and the memory of his work will never be forgotten. All of us heard with regret of his serious illness in the summer, but once again his amazing power of recuperation came to the rescue: his interest in the work of the Council is as keen as ever, and I am glad to be able to report that his counsel is again available to his successor. Sir Donald's place as father of the Council was taken by Sir John Moore, and to him also we have to say adieu. He made his last appearance as a member of the Council at a meeting of the Pharmacopœia Committee in October, after completing 30 years of service as the representative of the Royal College of Physicians of Ireland and 23 as chairman of the Public Health Committee. He served 30 years on the Pharmacopœia Committee and 27 on the executive. Sir John occupied a position on the Council all his own. His courtesy endeared him to us all, and we all wish for him peace and happiness in the autumn of his days."

He went on to welcome in Sir Donald's place Prof. E. P. Cathcart, as the Glasgow representative from whom help in the consideration of the ever-present problems of medical education might be expected; Prof. Moorhead, as the representative of the Royal College of Physicians of Ireland in succession to Sir John Moore; and two direct representatives, re-elected unopposed for England, Dr. E. K. Le Fleming and Dr. J. W. Bone.

### THE STATUS OF THE COUNCIL

The President then quoted a letter written 75 years ago by Sir Benjamin Brodie, the first president of the Council, in which Sir Benjamin defined the status of the Council in the following words: "The Medical Council is appointed by Parliament to act in those matters which affect the Medical Profession, both on the part of the Profession and of the Public. It is not to be supposed that they have any interests of their own to serve; and it is as much out of their way to proceed by way of Petition as it would be for the Board of Trade to do so. Where they conceive that any alteration is required in laws concerning the profession, it is their duty to represent this in the proper quarter, not as petitioners, but as coadjutors of the Government in one department of the public business." These words, said the President, would bear repetition.

### MEDICAL EDUCATION IN INDIA

"Reciprocity of medical practice within and outwith the British Empire," said the President, "is administered by this Council under the provisions of Part II. of the Medical Act of 1886, and, in accordance therewith, H.M. Queen Victoria declared by order in Council that this part of the Act should apply to British India on and after July 1st, 1892." Here, said he, are the words of the Act:—

"Her Majesty may from time to time by Order in Council declare that this part of this Act shall be deemed on and after a day to be named in such Order to apply to any British possession or foreign country which in the opinion of Her Majesty affords to the registered medical practitioners of the United Kingdom such privileges of practising in the said British possession or foreign country as to Her Majesty may seem just; and from and after the day named in such Order in Council such British possession or foreign country shall be deemed to be a British possession or foreign country to which this Act applies within the meaning of this part thereof."

Thereafter, application may be made by any medical degree or diploma-granting body in the country concerned to have its degree or diploma "recognised." This "recognition" is the act of this Council, who must be satisfied that the diploma furnishes a sufficient guarantee of the possession of the requisite knowledge and skill for the efficient practice of medicine, surgery, and midwifery. There is no reference in the Act to the methods to be employed by the Council in arriving at their decision, but the fact that most of the Possessions (I am using the word of the Act) have official organisations controlling medical education and registration within their own boundaries provided a ready means of ascertaining and evaluating their standards. The outstanding exception was India, where no such central organisation to which we could apply for official information existed, and the Council had no alternative but to deal with the provincial licensing bodies individually. First, in 1892, the degrees of the University of Bombay were recognised, and, in 1893, those of the Universities of Calcutta, Madras, and the Punjab. Allahabad followed in 1914, and Lucknow in 1921.

Here is what Sir Donald MacAlister said in his address to the Council on Nov. 25th, 1930:—

"The India Office has communicated to us the report of a conference of provincial and university representatives, held at Simla during the summer, for the purpose of considering the creation of an All-India Medical Council. After a full and frank discussion of the position, it was agreed that the creation of such an All-India organisation, for the purpose of maintaining a uniform standard of qualifications for the graduates of Indian universities, is essential and acceptable in principle. Resolutions concerning the constitution and functions of the proposed Council were adopted, and commended to the Indian Government as the basis of central legislation; and it was urged that without undue delay the necessary steps be taken to bring the new law into operation. The Council cannot but express its satisfaction that a solution of the vexed question of Indian medical standards, applicable to the whole of British India, should be practically envisaged by the Government of India; and that the responsibility for maintaining these standards, especially in relation to their extra-Indian aspects, should be assumed by a central Indian body having statutory authority. The application of Part II. of the Medical Act, 1886, was made in 1892 by Her Majesty in Council to India as a whole, without reference to its provinces. The Council has accordingly, throughout its discussions on the subject of Indian medical qualifications, continued to look to the central government for the information and the guarantees without which its functions under the Act cannot be properly performed. It therefore counts with confidence on the speedy establishment of a central board or council for India, comparable with the medical boards or councils of other parts of the Empire with which this Council is in regular official communication, and to which it can refer for authoritative information on all questions of local professional qualifications and standards."

On Nov. 23rd, 1931, the Executive Committee considered a communication from the India Office enclosing a copy of the revised draft bill to establish a medical council in India. The committee resolved:

"The Executive Committee have considered the draft bill and the accompanying communications from the India Office, and recognise with satisfaction that it represents a well-directed effort to establish by Statute a body which by its constitution and functions is designed

to maintain a satisfactory minimum standard of medical qualification for admission to the proposed Indian register. The Executive Committee are of opinion that, if carried into law, the Bill will conduce to the improvement of Indian medical education, and serve the best interests, both internal and external, of Indian medicine in general."

Few medical bills pass through any legislature without prolonged and ardent discussion, and India has proved no exception to this experience. Much of the discussion centred round the claim for admission to the Indian register of the licentiates educated in Indian medical schools, with which this Council are not concerned, and the difficulty has been solved by dropping the proposed Indian register: the Act establishes a council for medical education and standards only.

I said in India, and I repeat from this platform, that this Council would welcome the establishment of such an all-India medical council, which by inspection and visitation and the publication in its minutes of the reports of the inspectors (as is done in this country) would supply the Executive Committee with the information which is necessary to enable them to discharge the duty laid on the Council by Part II. of the Medical Act of 1886. For the last 11 years this Indian question has rarely been far from my thoughts, and I have the support of the Executive Committee when I say that no effort on our part will be lacking to make the Medical Council of India, constituted under the Act, a success.

### OTHER EASTERN INTERESTS OF THE COUNCIL

The President said: "Part II. of the Medical Act of 1886 has been applied to Ceylon, Hong-Kong, and the Straits Settlements. We await a report from Ceylon dealing with the further progress made by the Ceylon Medical College along the lines of Sir Richard Needham's suggestions. Through the Colonial Office, the Executive Committee received invitations from the University of Hong-Kong, and the King Edward VII. College of Medicine, Singapore, to send a visitor to be present at their examinations. Sir Richard Needham accepted our invitation to act in this capacity, and is due in Hong-Kong this week. I saw the Vice-Chancellor of Hong-Kong before his departure for the East in August, when he expressed the hope that he might expect not only visitation and inspection, but also helpful advice. That we may be sure Sir Richard will be ready to give; they could not easily find a more competent adviser."

### THE PHARMACOPŒIA COMMISSION (1933–1936)

The President then announced the personnel of this Commission in the following words: "Dr. A. P. Beddard, consulting physician to Guy's Hospital, chairman; Dr. O. L. V. S. de Wesselow, professor of medicine and director of the medical clinic at St. Thomas's Hospital; and Dr. D. Hunter, assistant physician and medical tutor at the London Hospital, representing clinical medicine; Dr. J. A. Gunn, professor of pharmacology in the University of Oxford, representing pharmacology; Dr. P. Hartley, director of standards at the National Institute for Medical Research, who brings to the Commission special knowledge of therapeutic substances; Mr. R. R. Bennett, B.Sc., F.I.C., chairman of the British Pharmaceutical Conference in 1928 and 1929, representing general pharmacy; Mr. Thomas Tickle, B.Sc., F.I.C., public analyst for the county of Devon, representing pharmaceutical and analytical chemistry; and Mr. Bernard Howard, B.Sc., F.I.C., vice-president of the Institute of Chemistry from 1930 to 1933, representing general chemistry."

"The Commission," added the President, "embark on their duties not only equipped with the experience of their predecessors, but endowed with opportunities not available to them. Thanks to the happy relations existing between the three bodies working under one roof, it has been possible, largely through the generosity of the Dental Board, to establish a laboratory where most of the necessary routine research work will, in future, be done under the direct supervision of the very efficient secretary of the Commission."

A vote of thanks to the President for his address was proposed by Mr. F. J. Steward, seconded by Sir Robert Bolam.

The Council then passed to the consideration of penal cases, which, in accordance with custom, were held in public, the Council deliberating on its judgments in camera.

# PANEL AND CONTRACT PRACTICE

## Difficulties over Emergency Treatment

THE regulations in the insurance code about emergency treatment are not very precise, and there is a dispute about them between the London panel and insurance committees. Take an insured person who falls downstairs at home and breaks a leg. That is quite obviously an emergency, and the proper procedure for his relatives is to send for his own insurance doctor. If neither this practitioner nor his deputy is available, it is the duty of any other insurance practitioner who may be summoned and is available to give necessary treatment, and forthwith to inform the insured person's own doctor that he has done so. The insurance committee reads into this regulation that the insured person must not in any case pay for the treatment. Discussion has turned in one case on what is meant by *available*. It is not likely that any responsible doctor in the case cited would, if at home and if he received the message, refuse to go; but in another case the responsible doctor was at home, he did receive the message, but he refused to go to the case—which had become suddenly worse—because, he said, he could not do any good by going. Was he available? The relatives in this case called in another doctor who sent in a claim for emergency treatment. This was disallowed by the panel committee on the ground that the responsible doctor was available, but of his own volition refused to attend. The relatives would, therefore, probably have to pay for the services of the second doctor and if aggrieved have the right to complain against the first doctor for refusing to go when sent for. If in the fracture case the responsible doctor had been away from home, and therefore obviously not available when the message was sent, no difficulty would arise in paying the proper fee to the attending doctor from the money due to the responsible doctor.

But if, for example, the harassed relatives do not send for him at all but call in someone else—it may be for quite a good reason—the position becomes more difficult, and it is this sort of case that has led to disagreement. The procedure is for the attending practitioner to send in a claim to the insurance committee for a fee on account of the service he has rendered, unless he has asked for a fee and been paid at the time, which he should not do. His claim is forwarded to the panel committee which also receives observations on the case from the responsible practitioner. Under Clause 3 of the Distribution Scheme

the panel committee has power "to disallow any item of account." They read into this regulation that they only have power to decide whether the claim for payment is a proper one. Since emergency treatment can only apply to the first attendance it is difficult to understand why the word *any* is used in this regulation. If after consideration the panel committee decides to disallow the claim, the attending practitioner does not get paid at all unless he can obtain a fee from the insured person. On this point the insurance committee says in effect: here is a purely professional body purporting to decide whether an insured person shall pay fees to an insurance doctor for work which the insured person certainly thought necessary (and presumably the attending doctor thought so too because he gave the treatment) when the insured person has been given no opportunity of being heard himself, and when he has no representatives of his class on the tribunal which is considering the case. In the particular fracture case mentioned the attending doctor charged the patient 5*s*., and the patient then wrote to the insurance committee demanding the return of the fee under Clause 7 (iii.). The executive section of the medical benefit subcommittee considered this application for the return of 5*s*., and decided to allow it. They informed the attending doctor that 5*s*. would be deducted from his pay, and advised him that he could get it back under the emergency treatment scheme, as this was obviously an emergency. When the decision came to the notice of the panel committee it said at once to the insurance committee: you have no power to decide what is an emergency or rather what services should be paid for under the emergency treatment scheme. That is solely for the panel committee to decide.

The Ministry, being asked by the panel committee to give a ruling, expressed the view that whilst there is something to be said on both sides it would have been better, having regard to the intention of Clause 3 of the distribution scheme, for the panel committee to determine whether an emergency fee shall be payable, and for the insurance committee to refrain from any action until the panel committee has considered it. Independent action by the committees might prevent the doctor providing treatment from receiving any fee for services for which he is clearly entitled to be paid either by the insured person or by the insurance committee. It should be noted that under Clause 7 (iii.) of the terms of service, if the committee decides to secure the withdrawal of an account or the refund of the fee(s) charged, the committee *shall* credit the practitioner with the remuneration to which he would have been entitled if the applicant had been attended by him as a temporary resident. It is argued that this clause must override clauses of schemes designed to carry out these terms of service. It thus appears at first sight that if, after the panel committee had decided that some particular incident was not an emergency and the insured person had paid the attending doctor for the attendance, the insured person would have the right to reclaim the fee under Clause 7 (iii.), and if such claim was allowed by the insurance committee it would then *have* to pay temporary resident fees to that doctor for the attendance after deducting the actual fee paid by the patient from his remuneration. In other words he would receive about 12*s*. 6*d*. instead of 5*s*. But Clause 7 (iii.) only applies where the insured person does not represent himself to be an insured person. Such a state of affairs could exist if the attending doctor charged and received from the patient (say 5*s*.), provided the patient was not living outside the area of practice of the responsible doctor. The 12*s*. 6*d*. in this case would be deducted from the fund, and would not come out of the pocket of the responsible practitioner as it would do if the case were reported as, and agreed to be, an emergency treatment on an insured person under the Act.

The position is unsatisfactory. The medical service subcommittee and not its executive section is the proper tribunal to decide claims arising under Clause 7 (iii.), for, apart from emergency claims, points often come up for decision in which both doctor and patient are affected. A decision can then only be arrived at by a tribunal consisting of an equal number of doctors and laymen with an independent chairman.

# PUBLIC HEALTH SERVICES

## Local Incidence and Prevention of Diphtheria

IN his statistical review for 1925 the Registrar-General drew attention to the change which had taken place in the seasonal distribution of diphtheria, a sharp peak in the mortality-curve occurring in January during the years 1921-25 instead of a sustained elevation in the last three months of the year, which had been a feature of the curve in the latter part of last century and the first decade of the present. The curve of incidence, as distinct from mortality, showed two peaks, the first occurring in October separated by a depression in December from a slightly higher maximum in January coinciding with the peak of mortality. Since that report diphtheria has maintained this distribution with slight fluctuations, although in 1931, 1932, and 1933 there has been a tendency for the maximum incidence to occur at the end rather than at the beginning of the year, January, 1931, being the last occasion on which the incidence was heavier than in the preceding late autumn. It may be that diphtheria is beginning to undergo one of those secular changes which characterise so many of the endemic communicable diseases. If not, its behaviour during the present year suggests that the volume of cases and, therefore, the mortality, may be high during the winter upon which we have now entered. In the four weeks ended Oct. 7th 4540 cases were recorded as against 3538 for the corresponding period last year, and the rise has been sudden. The number of cases notified between July 15th and Oct. 7th "is nearly 20 per cent. in excess of that for the corresponding period of 1932." In the following four weeks, ended Nov. 4th, 511 cases were notified as against 4062 in the same period of 1932.[1]

The sudden rise in diphtheria is causing alarm in some areas, especially in the north. In Oldham concern has been caused by the involvement of a school in which, among the infant scholars alone there were four deaths in June, July, and August, and the mixed department became involved in October. At Dunsdale, a small village near Guisborough, 13 cases had occurred by the middle of October, obviously a heavy rate of prevalence for a community of this kind. Similar reports have been received from other parts of the country. As is usual in such circumstances the time-honoured remedies are brought out and aired. Medical officers are being pressed to close schools, a practice which may be of some avail in isolated rural areas, but of none in towns. Disinfectants are being freely used in class-

[1] Weekly Epidemiological Record, Health Section, League of Nations, Nov. 9th and 16th, 1933.

rooms, usually at the demand of teachers. The state of the drains, of course, is being questioned. Of the more enlightened measures, extensive swabbing of school-children is being done with the object of detecting carriers. Hospital accommodation, overtaxed, is being temporarily or permanently extended. Whatever steps are taken local epidemics are coming to an end, as they inevitably do, and ceasing therefore to be of local interest except to those families who have actually suffered.

### IMMUNISATION

The opportunity is being seized by medical officers of health to urge the public to accept immunisation as the only sure prophylactic. It is of interest therefore to examine the extent to which it has been adopted throughout the country, and for this purpose some of the larger towns may be considered. The early and sustained efforts made by the public health departments in Aberdeen and Edinburgh are well known, but it is notable that in Glasgow, by far the largest city in Scotland, practically nothing has been done, except for the protection of hospital staffs. As the writings of Dr. J. Graham Forbes have shown, a good deal has been done among London school-children. Last year Dr. Elwin Nash reported a big drive in Heston and Isleworth. So far attention appears to have been concentrated upon school-children; but, if the American finding that no influence upon the total incidence is to be expected until at least 30 per cent. of children under 5 years of age are protected is taken as a guide, it is this age-group which deserves special attention.

Some information on this aspect of the question is to be found in the annual reports of medical officers of health. For instance, immunisations have increased in Birmingham from 1099 in 1925 to 11,566 in 1932, the total in these years amounting to 34,443. The number of preschool children treated is not stated, but if the proportion which held good in 1932 (333 out of 11,566) is applicable to the total, not more than 1000 children of this age—and probably much fewer—have been rendered immune among a population of about 79,500. In Liverpool the total number inoculated by the end of 1932 and remaining under 5 years of age was 1317 among a population of 82,443, whereas 8101 over this age had been rendered immune. In Manchester effort appears to have been concentrated upon the young child through the welfare centres, so that the age-group with which we are concerned accounted for 2820 immunisations in 1932 out of a total, excluding hospital cases, of 3714. The age-group population is about 70,000, and as the scheme has been in existence since 1928 and, no doubt, a proportion of the hospital cases are under 5, the aggregate effect must be considerable; but it would be useful if actual figures were available to show how many of the immune children are still under 5. In Cardiff 6944 immunisations had been completed by the end of 1931, but only 973 of these children remained under 5 at the end of that year. Approximately 200 of them were over 5 years of age by the end of 1932, and only 76 fresh immunisations at these ages are reported for that year, so that less than 900 of a population numbering 17,462 had acquired artificial immunity. In Leeds, of a population in the age-group of 34,048, the number immunised at welfare clinics in 1932 was 737, and probably a large proportion of 495 dealt with by private practitioners were of this age. No figures as to the total number of immunised children remaining under 5 years of age are given. In Hull, where the heavy incidence of diphtheria has been causing anxiety, special efforts to obtain consent to immunisation in 1932 have resulted in only 437 treated to a conclusion, the ages not being stated. The aggregate effect on incidence must therefore be negligible in all these towns.

Generally the annual reports indicate that medical officers of health are anxious to persuade their councils and the people to accept prophylaxis, especially in areas where the prevalence has been high in recent years. A large number of towns have set up schemes for utilising the general practitioner or the facilities provided in connexion with the school medical service and child welfare. Many complain of the poor response. A few have analysed their results in order to determine the relative incidence of diphtheria in immunised and non-immunised groups. For instance, it is shown that in Liverpool the incidence was 12·6 per 1000 among children under 10 years of age who had not been inoculated, whereas the rate among the immunised at these ages was 1·8. In Cardiff (1931) the corresponding rates for children under 13 were 8·8 and 3·7; in Bristol, for the age-group 1–14, 4·8 and 1·2. These facts, together with the incontrovertible evidence obtained among specially exposed populations, such as hospital staffs, afford a sufficient body of evidence to justify intensified effort to popularise immunisation. The Minister of Health has encouraged local authorities to provide facilities for prophylaxis, but much more requires to be done to further its general acceptance. Perhaps the trend of incidence referred to at the beginning of this note will afford an opportunity for doing so during the present winter. It would be much more likely to be practically successful, however, if some of the methods of speeding up the development of immunity and reducing the number of operations which have recently been published were proved to be reliable and the necessary material were made widely available at a reasonable cost.

## INFECTIOUS DISEASE

### IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 18TH, 1933

*Notifications.*—The following cases of infectious disease were notified during the week: Small-pox, 1 (last week 1); scarlet fever, 4381; diphtheria, 1311; enteric fever, 32; acute pneumonia (primary or influenzal), 922; puerperal fever, 46; puerperal pyrexia, 94; cerebro-spinal fever, 21; acute poliomyelitis, 16; encephalitis lethargica, 11; dysentery, 12; ophthalmia neonatorum, 67. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 21st–22nd was as follows: Small-pox, 2 under treatment, 3 under observation (last week 3 in all); scarlet fever, 3411; diphtheria, 2111; enteric fever, 20; measles, 429; whooping-cough, 136; puerperal fever, 22 mothers (plus 4 babies); encephalitis lethargica, 253; poliomyelitis, 4; "other diseases," 189. At St. Margaret's Hospital there were 8 babies (plus 3 mothers) with ophthalmia neonatorum.

*Deaths.*—In 118 great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 11 (1) from measles, 13 (1) from scarlet fever, 11 (0) from whooping-cough, 51 (8) from diphtheria, 52 (13) from diarrhœa and enteritis under two years, and 61 (13) from influenza. The figures in parentheses are those for London itself.

Liverpool reported the only death from enteric fever outside London. Three fatal cases of scarlet fever occurred at Bolton and at Sunderland, 2 at Newcastle-on-Tyne. Liverpool reported 3 deaths from whooping-cough. Of the deaths from diphtheria, 8 were reported from Liverpool, 6 from Hull. Four deaths each at St. Helens and Birmingham were attributed to influenza, 3 at Salford.

The number of stillbirths notified during the week was 250 (corresponding to a rate of 48 per 1000 total births), including 38 in London.

# CORRESPONDENCE

## DIET AND WEIGHT

*To the Editor of* THE LANCET

SIR,—Hyperbole is always a dangerous weapon to use, and my letter to you, though designedly hyperbolic, has led to a certain amount of foolish chatter. In gratitude for the courtesy of Dr. Byrom and Dr. Hunter, I should be glad if you would allow me to underline some of the inferences which may justifiably be drawn from my previous letter.

To be content with things as they are is a state of mind which to-day is very uncommon. Like the Jewish nation 2000 years ago we persist in looking for a sign, and it is to this lack of contentment that we owe such varying modern phenomena as patent medicines, unorthodox practitioners of the healing art, fantastic reliance on word-of-mouth testimony, a passion for constant titillation of the senses, and a thousand other expressions of the present cry for signs and wonders. He who tries to remain detached from this emotional whirlpool and who calls to mind the admonition, "Be still, and know that I am God," lays himself open to the charge of being desirous of hindering progress. The current of life to-day is most commonly of the alternating variety, and we seem to care little whether we go forwards or backwards so long as we move. It is not, therefore, out of place that a voice should occasionally be raised acting as a reminder that progress and regress are not the same thing, and that alteration is not necessarily improvement. In the comparatively unimportant question of the optimum amount of fat wherewith a human being should be clothed, I think that the life assurance companies and the sexual selection of the boyish outline as the highest form of human beauty are the two factors which operate most successfully in spreading the belief that fatness is both æsthetically repulsive and vitally dangerous. The swing of time's pendulum will right the second belief, which incidentally is only held by a minority of the inhabitants of the earth. The views of assurance companies, however, are much more dangerous, for these corporations have become high priests of Mammon. Since this worship has such a multitude of adherents, the beliefs imposed upon the faithful are likely to be long-lived.

Ultimately the question of bodily fat and its advantages or disadvantages can be narrowed down to this: is it better for the progress of the human race that men should die from fatty infiltration of the myocardium between the sixth and seventh decades of life or that, to obviate this, numbers of human beings should be deprived of fat insulation and as a consequence suffer from such common modern complaints as neurasthenia and lack of emotional balance? There are times when one feels that no one who works in a laboratory ever makes any pronouncement without the magic preface "Science teaches," or "It is an accepted fact." Am I being very reprehensible if as a clinician I state my belief, based purely on impressions and with no equational verification, that too little fat is productive of many asthenic conditions both of mind and body, and that for every heart saved from fatty degeneration there are a multitude of nervous and physical shortcomings which in differing manifestations form the many unnamed diseases of the twentieth century? I am not concerned with such clear-cut syndromes as myxœdema or Graves's disease, but I confess that I should prefer the former to the latter. It is certainly within my observed experience that when I am fat I can face the blows of fortune with comparative equanimity, but that when I diet myself and lose weight the necessary pin-pricks of daily life become fraught with almost mortal significance.—I am, Sir, yours faithfully,

CHRISTOPHER HOWARD.

Harley-street, W., Nov. 27th, 1933.

## SUPRACONDYLAR FRACTURE OF THE HUMERUS

*To the Editor of* THE LANCET

SIR,—Your leading article of Nov. 25th raises issues in the treatment of this injury which are very important; but there are certain points to which I should like to draw attention.

The name supracondylar does not accurately describe the most important fracture in this region. As its name implies, the line of supracondylar fracture is above the condyles; it is, too, practically always above the upper margin of the olecranon fossa and is therefore outside the capsule of the joint. This fracture is relatively uncommon; it may be regarded as a fracture of the shaft for purposes of treatment and as a rule presents no undue difficulties. On the other hand, the line of the transcondylar fracture is at or very near the level of the condyles and passes directly through the olecranon fossa, or commencing in the region of either condyle passes obliquely to, or towards, the epiphyseal line. The important point is that the line of this fracture is within the joint cavity, the soft structures of which are damaged and *inevitably* become involved in callus-formation during repair, while in addition the olecranon fossa and the grooves of the lower end of the humerus are filled with callus which must necessarily be absorbed and remodelled before full movement can be expected. This is a very common fracture, in fact almost the most common in children; numbers are seen in a fracture department; and, when there is displacement of the fragments it always presents difficulties in treatment—on occasion, danger to the arm itself.

The aim of immediate treatment is to obtain a perfect anatomical alignment and to maintain this by keeping the elbow as completely immobilised as is possible. Reduction can usually be obtained by manipulation if this is carried out within a few hours of the injury; failing this, or should the effusion into the tissues be such as to threaten the general circulation of the limb, an open operation should be considered to relieve the tension and replace the fragments.

It has been generally taught that after reduction the arm should be fixed with the elbow flexed. Flexion of the elbow does produce traction on the lower end of the humerus and by tightening the tendon of the triceps exerts a certain splinting effect. But to be effective flexion must be acute and this position is so dangerous that it should not be used. In my opinion flexion that is not forced is of but little value as it fails to maintain, what is so important, an absolute immobilisation; hence shifting and slipping of the fragments is apt to occur, causing not only excess of callus to be formed, but also to produce eventually those imperfections on which Avellan lays stress. Apart, therefore, from a dislike of depending on the position of a limb itself to maintain fractured fragments in position, I do not think in these particular fractures it affords sufficient protection or security. Therefore, it has been my practice for some time now, after reduction, to encase the whole

arm in a light plaster from the axilla to the base of the fingers, with the elbow at a right angle of flexion and the forearm and hand in a position of rest, that is in nearly full pronation; care should be taken that the plaster has set before traction on the arm is relaxed. With this method there is little fear of the fragments slipping, nor of any interference with the circulation, and owing to the immobilisation afforded a minimum of callus is thrown out. The plaster is left on for some four or five weeks and after this voluntary movements are encouraged.

Whether a true myositis ossificans occurs after these injuries is, I believe, very doubtful. Bony spurs and bridges may follow transcondylar fractures in children, but are more often seen in adults after an injury in which small, often minute, fragments of bone have been separated off the articular surface or condyles of the humerus, the head of the radius or coronoid process of the ulna—e.g., after a dislocation of the elbow. The new bone-formation, in my experience, seldom if ever commences in the muscles but in the soft structures of the joint continuing as a bony infiltration of the capsule, a fact which renders treatment almost hopeless. It teaches us, however, that all injuries, especially of the elbow-joint with separation of bony fragments (the smaller the more dangerous they are), should be kept immobilised during the callus-forming period and that voluntary movements only should be employed afterwards.—I am, Sir, yours faithfully,

London, W., Nov. 26th, 1933. F. D. SANER.

## DIVERTICULA OF THE SMALL INTESTINE

*To the Editor of* THE LANCET

SIR,—I am in agreement with Mr. Mason about the origin of duodenal diverticula, but I disagree with him about the origin of those diverticula which, appearing in large numbers and studding the mesenteric border of jejunum and even extending into the ileum, are found occasionally by the surgeon. But as the disagreement may be due to a difference in our classification I will give my own subdivision of jejuno-ileal diverticula.

*Group* 1.—Diverticula, the result of adhesions, glands, cicatrices, &c.—an anomalous and uninteresting group of individual cases.

*Group* 2.—The diverticula associated with the incomplete obliteration of the vitello-intestinal duct (Meckel) interesting but not to be considered here.

*Group* 3.—Diverticula of enterogenous origin—i.e., arising from those cysts which resulted from the vacuolation of those nests of cells described by Lewis and Thyng which lie adjacent to the embryonic gut. These cysts may remain intact and have been described in the mesentery or in the wall of the gut. Should these cysts form a connexion with the lumen of the intestine then we have the production of enterogenous diverticula. The condition has been dealt with very fully and with great clarity by Arthur Evans (B.J.S., 1929, xvii., 34).

*Group* 4.—The "idiopathic" variety. The salient features of the condition are the appearance in large numbers, 50–500, of large diverticula (average size that of a golf ball) which spring from the upper small intestine and pass between the leaves of the mesentery. They are found most often in the male sex and usually in the later years of life. They are all related to the point where the artery pierces the intestine and are for the most part of the "false" variety—i.e., the sac is a herniation of the bowel mucous membrane through the muscle—although in the small sacs there may be found many strands of muscle.

Group 3 is admittedly congenital in origin. The cases are few in number. Group 4 is, I contend, nndoubtedly of an acquired origin, and for the congenital theory to be the correct one it must satisfy the following queries and facts:—

1. Why is the disease found only after middle life and never in the fœtus or the young?
2. Why is there a preponderance in the male sex?
3. Why are the intermediate stages of production never seen?
4. In many of the recorded cases—Astley Cooper, Godard, &c.—there was a stricture below the affected region. Could this not be a factor in the causation?
5. All the large sacs are "false" (herniæ of mucosa alone); the smaller admittedly may show muscle in the early stages.
6. The herniæ take place at the mesenteric border, not because the pressure is greatest at that point, but because the peritoneal coat is there missing and in the jejunum the longitudinal muscle coat is often divaricated. (Piersol's Anatomy.)

These points suggest to me an acquired theory and certainly forcible distension can produce sacculation exactly similar to that obtained clinically. I must admit the possible fallacies of all work done on dead material. I agree with Mr. Mason that sclerosis is not a constant factor. In a case under my care the patient was 30 years of age and showed no signs of arterio-sclerosis. I would favour a neuro-muscular cause just as probably diverticulosis of the colon—70 per cent. of which appears in the pelvic, the most contracted region of the colon—will possibly be shown to be the late result of spastic colon. Admittedly a dilated colon never shows diverticula, so diverticula in the dilated small gut (such as duodenal ileus) do not appear.

A congenital theory does not appear fully to explain the origin, but I think the final word has not yet been written upon this very interesting disease. I am, Sir, yours faithfully,

Belfast, Nov. 26th, 1933. IAN FRASER.

## PUBLIC MORTUARIES

*To the Editor of* THE LANCET

SIR,—In THE LANCET of Nov. 18th (p. 1188) you give a description of the model mortuary of Battersea which, erected in 1901, has been brought up to date as new methods and inventions have been proved necessary. The Battersea borough council have read the spirit of the Public Health Act in a manner which might well be copied by others. In the provinces, Sections 141 and 143 of the P.H.A., 1875, have generally been interpreted by negation—the word "may" translated as "wo'n't"—and the pen of a master of rhetorical invective could not adequately describe the deplorable conditions in which the dead are temporarily housed and the provision made for the carrying out of post-mortem examinations. Police surgeons and pathologists welcome the attention you are giving to this disgraceful state of affairs, and hope the publicity will prompt the Ministry of Health to insist on the word "shall" taking the place of "may" in the sections mentioned. The solution of the problem is simple if urban and rural districts would combine to provide mortuary accommodation in the same way as they have done for the provision of isolation hospitals.

I am, Sir, yours faithfully,

Wigan, Nov. 27th, 1933. W. E. COOKE.

## ACHOLURIC JAUNDICE

*To the Editor of* THE LANCET

SIR,—Dr. Hubble rebukes me for classifying the case that I reported in THE LANCET of Nov. 18th as one of acholuric jaundice. He points out quite

accurately that, prior to splenectomy, there was no evidence of increased fragility of the red cells and none of familial incidence of jaundice. On the other hand, as I made clear in my report, there *was* increased fragility after splenectomy and the section from the excised spleen was stated by a competent pathologist to show the changes usually associated with acholuric jaundice. In the circumstances it may not be unreasonable in me to hope that Dr. Hubble will, on reflection, forgive me.

I am, Sir, yours faithfully,

A. P. THOMSON.

Edgbaston, Birmingham, Nov. 25th, 1933.

## G.P.I. AND CHILDBEARING

*To the Editor of* THE LANCET

SIR,—I should be extremely grateful if medical men who have come across persons of either sex suffering from general paralysis of the insane, who in the course of their disease have had a child, would kindly communicate with me.

I am, Sir, yours faithfully,

G. W. T. H. FLEMING,
Hon. Sec., Clinical Psychiatry Subcommittee, Royal Medico-Psychological Association.

Hereford Mental Hospital, Burghill, Hereford, Nov. 24th, 1933.

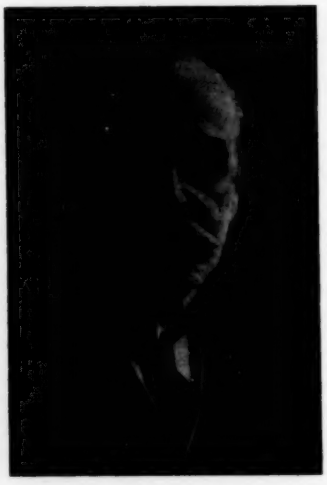
# OBITUARY

## THOMAS HERBERT BICKERTON, F.R.C.S. Eng., Hon. Ch.M. Liverp.

SENIOR OPHTHALMIC SURGEON TO THE ROYAL INFIRMARY, LIVERPOOL

WE regret to announce the death of Mr. Thomas Bickerton which occurred at his residence in Rodney-street, Liverpool, on Nov. 23rd. The best-known ophthalmic surgeon on Merseyside, his reputation extended far beyond his native city.

Thomas Herbert Bickerton was born in 1857 at Mount Pleasant, Liverpool. His father, a naval reserve surgeon, practised in Liverpool as a nose, throat, and eye specialist, leaning to ophthalmology. The son was left an orphan at the age of 15, his mother having died when she was very young, while his father was killed in a carriage accident at the age of 45. He received his preliminary education at the Liverpool Institute, from whence he went to study medicine at the Liverpool Royal Infirmary. He qualified as M.R.C.S. Eng. in 1879, taking afterwards the diploma of L.R.C.P. Edin., and served both as house surgeon and house physician at the Liverpool Royal Infirmary. Deciding to follow the career of an ophthalmological surgeon he obtained the post of assistant at Moorfields, and later was ophthalmological assistant at Great Ormond-street Children's Hospital. He then carried on post-graduate studies in the subject at Vienna, and after holding various ophthalmological appointments at the Southport General Infirmary, the Bootle Borough Hospital, and the Liverpool Eye and Ear Infirmary, he was elected to the staff of the Liverpool Royal Infirmary as ophthalmic surgeon.



MR. BICKERTON
[*Photograph by Ash*

These were the early days of specialisation, at any rate in the North of England, and Bickerton was one of the first practitioners in the provinces to dissociate the practice of ophthalmology from that of other branches of surgery. He commenced in Liverpool in the early eighties as being first assistant and then partner to Shadford Walker, senior surgeon to the Eye and Ear Infirmary. But Walker died soon after, when Bickerton determined to practise as a pure eye specialist. He came almost at once to the front among his colleagues by the publication of data resulting from his investigations into colour blindness in its relation with shipping disasters. On this subject he made over 40 years ago an important communication to the proceedings of the annual meeting of the B.M.A. held in Dublin in 1887. He criticised the existing attitude of the Board of Trade towards colour blindness in the mercantile marine, and pointed out that over 4000 colour-blind men were in all probability acting as sailors, and that while the danger incurred by their employment was great the means taken to guard against it were trivial. A personal investigation made in Liverpool showed that shipowners were aware of the position and certain of them examined their own men regardless of the Board of Trade certificate. Mr. Bickerton's communication was strongly endorsed by Argyll Robertson and Nettleship, and from that time he became a recognised authority ou the subject. He returned to the pursuit five years later at a meeting of the British Medical Association held in Nottingham, and continued to condemn the apathy of the Board of Trade, and Bickerton's close friendship with that great editor, Sir Edward Russell, of the *Liverpool Daily Post*, helped to secure Parliamentary approval for improved colour-blind testing.

As years passed the range of his activities became almost indefinitely extended. His honorary professional work embraced consulting surgeon to the Royal Infirmary, the Northern Hospital, the General Infirmary, Southport, the Bootle Borough Hospital, and the Catholic Blind Asylum. He was amongst that galaxy of prominent men who worked for the foundation of the Liverpool University, and was lecturer in ophthalmology from 1917 to 1923. He was conspicuous in his rôle of local historian, and was president of the Liverpool Medical Institution in 1908–09, and the growth and vitality of that body was his constant interest. He became a city magistrate, in 1926 was elected a Fellow of the Royal College of Surgeons, and was vice-president of the Ophthalmological Society of the United Kingdom.

Dr. Alston Hughes writes: "I take it that sincerity enhances the effect of an appreciation of his character. Bickerton in his personal dealings was a kindly genius, but in a cause he was a zealot. At times immoderate in pressing his views on extraneous affairs, in the practice of his specialty he was paradoxically and consistently temperate. Needless to say he exhibited great skill as an operator; his technique was simple and at the same time superb. Many a time according to the risks and laws of the art, he should not have succeeded, but, somehow or other, he invariably did; indeed the magnetic gift of attain-

ing that elusive quality, success, seemed inborn. The standard he set himself and often voiced to students was 'If this were my eye, should I like this operation or treatment carried out?' I do not remember an instance where he flouted this self-imposed rule. He seemed to know everything that mattered in the clinical aspect of his craft. It is equally true to say that he did not dwell overmuch on academic points. The mastery and gentle care of the individual patient coupled with clinical wisdom and operative skill were the aim and glory of T. H. Bickerton."

Bickerton's family connexions with medicine were very close. As has been said, his father was an ophthalmic surgeon. One sister married Mr. L. Webster Fox, of Philadelphia, who became a leading American eye specialist. Another sister married the late Prof. Rushton Parker. A half-brother is Col. Reginald Bickerton, D.S.O., ophthalmic surgeon to St. Dunstan's, and the Seamen's Hospital, Greenwich. His eldest son, Mr. H. Richard Bickerton, is carrying on his father's practice in Liverpool. His youngest son, Mr. J. Myles Bickerton, is senior ophthalmic surgeon at King's College Hospital, London, and surgeon and dean of the Royal Eye Hospital.

Bickerton in his early days was a keen horseman and a fine shot all his life. For many years his country house was Denhall, in Cheshire, the house described in that once popular sensational novel "The House on the Marsh."

### GRACE H. GIFFEN DUNDAS, F.R.C.S.I., D.P.H. Camb.

WE regret to record the death of Dr. Grace Dundas, medical officer for maternity and child welfare to the county borough of Middlesbrough, which occurred on Nov. 6th. Dr. Dundas, who was a native of Kelso, in Scotland, came to Middlesbrough in 1920, and had previously acted as medical officer to the M. and C.W. scheme at Leith, and as deputy medical officer of health at Ilford. The high standard of the Middlesbrough scheme was due to her untiring efforts in the cause of maternal and child welfare, and her kindly disposition and motherly care was universally esteemed by all the mothers and children with whom she came into contact. She had many original ideas, one of the latest of which was classes for fathers, the idea of fathercraft being that husbands should coöperate with their wives in the care of the health of their children.

# MEDICAL NEWS

### University of Oxford

Lord Irwin will be installed as chancellor of the University at 3 P.M. on Dec. 7th in the Sheldonian Theatre.

On Nov. 18th the degree of doctor of medicine was conferred on T. H. Sellors and A. H. Gale.

### University of Cambridge

Dr. A. E. Platt of Sydney has been elected to the Gwynaeth Pretty studentship for the encouragement of research in the ætiology, pathology, or treatment of disease.

### University of London

Among those who received the honorary degree of D.Sc. on Nov. 24th, in celebration of founders' day, was Sir Thomas Barlow, F.R.S., consulting physician to University College Hospital.

At a meeting of the senate on Nov. 22nd Dr. R. W. Scarff was appointed, as from Oct. 1st, 1933, to the university readership in morbid anatomy and histology tenable at Middlesex Hospital medical school. Since 1931 Dr. Scarff has been acting as senior pathological assistant in the Bland-Sutton institute of pathology at that school.

The title of emeritus professor of psychology in the university was conferred on Miss Beatrice Edgell, D.Litt., Ph.D., on her retirement from the professorship of psychology at Bedford College.

### Epsom College Royal Medical Foundation

At the meeting of the conjoint committee, held in November, pensions of £40 a year were awarded to Mrs. Annie A. Powell, Mrs. Lydia M. Braidwood, and Dr. William Henry Walker. Robert G. McKendrick was awarded a foundation scholarship. Since the annual general meeting, held in June last, the council of the College has awarded pensions of £40 a year to Mrs. Mary Sinclair and Mrs. Eunice C. Nelson, and extra pensions of £20 a year each to Dr. Herbert Blott and Mrs. Emily Hine, and an extra annuity of £8 a year to Miss Albina L. Bull.

The council of the College will shortly award a France pension of £30 a year to a duly qualified medical man of not less than 55 years of age. If the candidate is a single man or a widower, his income, independent of any allowance from the College or from the Royal Medical Benevolent Fund, must not exceed £100 per annum. Forms of application may be obtained from the secretary of the College, 49, Bedford-square, London, W.C.1, and must be returned to him not later than Dec. 31st.

### British Institute of Philosophy

An address entitled Plato and Aristotle in Relation to Modern Thought will be given by Prof. W. D. Ross at University College, Gower-street, London, W.C., at 8.15 P.M., on Tuesday, Dec. 12th. Cards of admission can be obtained from the director of studies at University Hall, 14, Gordon-square, W.C.1.

### Royal College of Surgeons of England

The annual meeting of Fellows and Members was held at the college on Nov. 16th. The attendance was somewhat meagre, and it was only after a wait of a quarter of an hour that the required quorum of 30 Fellows and members, exclusive of members of the council, was obtained. The president placed before the meeting the report of the council for the year ending July 31st, 1933. He referred to some of the subjects dealt with in the report, and among other things mentioned that the revision of the medical curriculum was now under consideration, and that Sir Buckston Browne had completed his gift of £100,000 for the research farm at Downe. In reply to a suggestion by Dr. Redmond Roche that a general practitioner should be appointed to the committee considering the revision of the medical curriculum, the president explained that the committee was composed of representatives from the universities of Oxford, Cambridge, and London, the two Royal Colleges, and the Society of Apothecaries, and that it was not practicable at this stage to add to the committee, which had already held several meetings and was expected shortly to be in a position to report. He thought the committee was representative of all the interests concerned. Dr. Howard Stratford, with reference to the revision of the medical curriculum, suggested that it might be desirable to add a course of instruction in first aid.

Reference having been made to the retirement of Sir Arthur Keith, the president undertook to express to him, on behalf of those present, their appreciation of the distinction and ability with which he had carried out the duties of conservator of the museum during the past 25 years.

The following resolution was then moved by Mr. Vaughan Pendred, F.R.C.S., seconded by Dr. Stratford, and carried by 24 votes to 2: "That this forty-fourth annual meeting of Fellows and Members of the Royal College of Surgeons of England reaffirms that members, who constitute ninety per cent. of the college, should have some representation on the council, a similar resolution having been passed 43 times and never once lost."

### Royal Sanitary Institute

Prof. W. W. Jameson will take the chair at a sessional meeting to be held at this institute, 90, Buckingham Palace-road, London, S.W.1, at 5.15 P.M., on Dec. 12th. A discussion on practical and scientific problems of the milk-supply and their laboratory control will be opened by Mr. Ben Davies, director of Messrs. United Dairies, Ltd.

### Royal Northern Hospital

At the recent dinner in aid of the funds of this hospital £5885 was contributed. This sum has enabled the institution to claim a grant of £5000 from King Edward's Fund, which was made contingent upon raising £5000 in donations by the end of the year.

### Society of Medical Officers of Health: Annual Dinner

Princess Louise was to have been a guest of honour at the dinner at the May Fair Hotel on Nov. 23rd, when Dr. Charles Porter presided. It would have been her first appearance at a public banquet, and, although not allowed to undertake any official engagements, she wrote to congratulate the Society on its work, laying stress in her letter on the power of teachers to endue the parents of children with the need of true hygiene. Sir Hilton Young, in proposing "The Society," remarked that it was the clearing-house of ideas in preventive medicine, and expressed special gratitude for the pioneer work of its central council in health education. He commended the disused hoardings of the Empire Marketing Board for advertising health. The national campaign against slums was, he said, more than any personal fad of a minister or government. It was the demand of the nation, and he looked to medical officers of health as a spearhead in the attack which would need the best energies of local authorities to accomplish; for they were embarking on a programme for clearing 200,000 houses in five years, an effort 70 per cent. greater than that proposed by local authorities when the Act of 1930 was passed. The country, he said, must concentrate on the business of getting rid of the gross evil of undoubted slums, houses that were unfit for human habitation and could not be made fit at a reasonable cost. Dr. Porter, in response, expressed his sincere happiness that we had a Minister of Health who was really going to see that the slums were cleared; he was not quite sure that the Minister had realised what the medical officer of health had had to go through in his effort to better the housing of the people. Dr. James Fenton, president of the metropolitan branch of the Society, proposing "The Guests," congratulated the Minister on his energy and courage in launching a scheme of slum clearance drive; he assured him it would not be the fault of medical officers if the scheme was not a success. Sir Holburt Waring, replying, emphasised the need for health training in the schools in order that the standard of living should be kept up in the new houses. Alderman James Fettes, Mayor of St. Marylebone, regretted that the medical officer's name was not better known in the area of which he had sanitary charge; the man in the street knew his name, if at all, as attached to appeals for rat week or to prevent the soiling of pavements by dogs. Miss E. M. Musson, chairman of the General Nursing Council, who also replied, took the opportunity of appealing to medical officers to employ a larger percentage of trained nurses in the new council hospitals, if only for the reason that the market was now getting overstocked with nurses, especially since the demand from the Dominions and the U.S.A. had stopped. She asked public health committees to ensure to nurses an all-round training, and she thanked the borough which was at present allowing a nurse to get her fever certificate concurrently with her general training. Probationary nurses, she remarked, were now not overworked; it was the matrons who were overworked from having so large an untrained staff to supervise. Captain G. S. Elliston, M.P., proposed "The Chairman" on an acquaintance of 25 years' standing, which started in Leeds with the daily production of a public health journal. The dinner was enlivened by Mr. Lionel King with incredible card tricks, including the dictating how a nap hand should be played at the high table by the President, Mrs. Porter, and Lady Young, when he could not possibly have seen the cards except by collusion with the Minister of Health.

### St. Bartholomew's Hospital

On Friday, Dec. 8th, at 3.45 P.M., the Prince of Wales, as president of this hospital, will visit the new medical college in Charterhouse-square in order to inspect the site and the buildings.

### Society of Medical Officers of Health

The fever hospital medical services group of this society will hold a meeting at 4.30 P.M. to-day, Friday, Dec. 1st, at 1, Upper Montague-street, London, W.C. Dr. H. S. Banks will deliver a presidential address on the use and misuse of antitoxin.

### Fellowship of Medicine and Post-Graduate Medical Association

A debate will be held on Thursday, Dec. 7th, at 8.30 P.M., at the lecture hall of the Royal Society of Tropical Medicine and Hygiene, Manson House, 26, Portland-place, London, W., when the motion will be that operations for the removal of tonsils are too often performed without adequate cause. Sir StClair Thomson will be in the chair. Mr. Herbert Tilley and Dr. J. Alison Glover will propose the motion, and Dr. Dan McKenzie and Mr. Archer Ryland will oppose it. All members of the medical profession are invited to be present. During 1934, on the second Saturday in each month, a lecture-demonstration will be given at 3 P.M. at the National Temperance Hospital, Hampstead-road, London, N.W., and on every Tuesday from 2.30 to 4 P.M. a lecture-demonstration will be given at the Medical Society of London, 11, Chandos-street, W.1. Further particulars may be had from the secretary of the Fellowship, 1, Wimpole-street, W.1.

### Radiological Congresses

The annual congress arranged by the British Institute of Radiology, incorporated with the Röntgen Society, will be held at the Central Hall, Westminster, from Dec. 6th to 8th, under the presidency of Dr. Stanley Melville. The programme is summarised in our Medical Diary. In connexion with the congress there will be an exhibition demonstrating recent advances made in radiological apparatus. The address of the Institute is 32, Welbeck-street, London, W.1. The annual dinner will take place on Friday the 8th, at 7.30 for 7.45 P.M.

The fourth International Congress of Radiology will be held in Zurich from July 24th–31st, 1934. At the opening meeting Prof. Gösta Forssell (Stockholm) will speak on the organisation of cancer campaigns in general, and representatives will report on the measures adopted in their own countries. The subjects to be discussed at the general meetings include X ray diagnosis of bone tumours, pulmonary tuberculosis as seen radiologically, radiation treatment of cancer of the uterus and of the mouth and pharynx, radiation genetics, and mitogenetic radiation. The secretary of the congress is Dr. H. E. Walther, Gloriastrasse 14, Zurich.

### University of Durham College of Medicine

Thirty-seven governors of the College have written to the local press to express whole-hearted endorsement of the resolution passed by the City Council of Newcastle-on-Tyne. This motion, which was passed by 55 votes to 1, requested Lord Londonderry to take steps to secure an impartial examination of the constitution and statutes of Durham University and its constituent colleges. The letter of the 37 governors points out that the presence of only one member, other than the nominees of the present administration, on the committee appointed to consider Sir Amherst Selby-Bigge's recommendations, makes impossible the task of reform from within the College. The letter is signed by the Lord Mayor and the Sheriff of Newcastle, the Mayor of Gateshead, the Deputy Mayor of Durham, the chairman of Newcastle Education Committee, and the following members of the medical profession who are also on the governing body: Dr. J. A. Charles (medical officer of health for Newcastle), Dr. S. W. Davidson (hon. physician to the electrical department of the Royal Infirmary), emeritus Prof. Robert Howden, Dr. Charles Irwin (hon. surgeon to the Tynemouth Jubilee Infirmary), Dr. G. C. M. M'Gonigle (medical officer of health for Stockton-on-Tees), emeritus Prof. Rutherford Morison, and Mr. W. E. Wardill (assistant surgeon to the Royal Infirmary).

# PARLIAMENTARY INTELLIGENCE

## NOTES ON CURRENT TOPICS

### Indian Joint Select Committee

A MOTION reappointing the Joint Select Committee on Indian Constitutional Reform was agreed to in the House of Commons on Wednesday, Nov. 22nd. A similar motion was agreed to in the House of Lords on Thursday the 23rd.

### Treatment of Road Accident Cases

In the House of Lords on Nov. 28th Lord MOYNIHAN presented a Bill to make provision for the payment of remuneration to registered medical practitioners and hospitals for treatment rendered to persons injured through the use of vehicles on the roads.

The Bill was read a first time.

### Rural Water-supply and Slum Clearance

On Nov. 27th, on the debate on the address, Mr. HICKS, speaking for the Labour opposition, said that during 150 years working people in this country had never been properly housed. Over 50 per cent. of the houses in Great Britain to-day have only two bedrooms. It was not an exaggeration, therefore, to say that every other house ought to be pulled down. When millions of people had to be content to live under such abominable conditions he said that starting off with 12,000 houses and under public pressure getting the number up to 44,000 was still, and would be, a very small effort.

Sir H. SAMUEL said a very large proportion of the population were actually underfed. The British Medical Association showed that a really wholesome dietary even at the minimum would contain more articles of food and in larger quantities than a considerable proportion of our people in the present distressful circumstances were able to purchase. It was certain, for example, that numbers of children in the poorer quarters of our towns were almost starved of milk. It was wrong therefore to assume that consumption was fixed and that they must cut down supply in order to fit a shrinking demand. The whole object of the national policy should be for a large demand in order to absorb an increased supply.

After further debate Sir HILTON YOUNG, Minister of Health, said that he noticed with much pleasure that there had been no attack on the public health services. There was no purpose upon which money could be better spent. He sent a circular in May to county and rural district councils urging them to utilise their powers under the Local Government Act of making contributions to the cost of rural water schemes. An increasing number of local authorities were making use of those powers but nevertheless the Government had decided that sufficient use was not being made of them and the Chancellor of the Exchequer had agreed to put at his disposal for this purpose £1,000,000 which would be used to make grants towards the capital cost of water schemes in rural areas prepared and initiated within the next few years. He would shortly introduce a Bill to deal with this matter. It was essential that local authorities and consumers of water should bear their fair proportion of the cost. Where after such contributions had been allowed for, the water schemes could not be promoted because of the prospect of a heavy charge on the parish rate the Exchequer grant would be used to mitigate the local burden.

Dealing with the question of slum clearance Sir Hilton Young said that there were 1717 local authorities, the greater number of them county districts not so particularly concerned with slum questions as others. Of these 1717 authorities all but 45 had now either submitted to him their programmes or satisfied him that they were taking action and their programmes were coming along. There were 45 laggards, all of them, he thought, in country districts. As to the latter the sands were running out and they must have a time limit, and within that time limit if the programmes were not submitted they must proceed to inquiry under the Act of 1930 which was the first step to putting into force his authority as Minister of Health to secure that the authorities did take action. There was a small class of local authorities whose programmes were inadequate. Negotiations with them were being actively continued, and there again he could not allow an indefinite extension of time for these negotiations. The Government were entitled to expect that all local authorities should follow the example of the best and that they should all start down the course together, and it was their business to secure that by the application of such a time limit there was such a general start. Programmes of the slum clearance of some 200,000 houses and more had been submitted. They were now assured of that figure of 200,000. Was that figure enough or was it not? They were dealing with houses unfit for habitation and which had to be cleared away without compensation to the owner; a specific class of house susceptible in the judgment of practical men to a clear definition. Other estimates had been put forward for a much larger figure—4,000,000, 1,500,000, and 1,000,000. They could only arrive at figures of that sort by taking a quite different class of house which was capable of improvement, which was capable of reconditioning, and if they put those in, they might get 1,000,000 houses. But if this slum campaign was to be a success they must concentrate in the first place upon the clearance of that class of house unfit for habitation and for which the owner might expect no compensation. Therefore the figure of 200,000 was the result of the considered judgment of the local authorities who had the greatest knowledge on the subject.

In order to give a complete account of the policy of the Government in respect of the slum clearance campaign, he must deal with reconditioning. In the King's Speech reference was made to the work of reconditioning and the approaching legislation on the subject. But he agreed that they would be wasting their efforts and the slum campaign would die away in London if they looked upon the reconditioning of houses as a substitute for clearance. They had dealt with the clearance problem first in order that it should be clearly defined before they got on to the second stage of reconditioning. It would be a matter of infinite regret if needlessly this question of a national effort against the slums were to become overmuch embroiled in party controversy. Criticism was welcome, criticism acknowledging a common end, and designed to promote and increase that end.

## HOUSE OF COMMONS

THURSDAY, NOV. 23RD

### Celluloid Toys and Risks of Fire

Mr. SUTCLIFFE asked the Home Secretary if his attention had been drawn to the risks to children from fire due to the use of cheap celluloid toys; and whether he had any record of fatal accidents or serious damage to property due to such toys.—Sir JOHN GILMOUR replied: In 1923 the Royal Commission on Fire Brigades and Fire Prevention drew attention to this danger in their report, but did not give particulars of any accidents due to celluloid toys. Since then accidents from the use of such toys have occasionally come to the notice of the Home Office, including one case where there was a fatality and serious damage to property, and two other fatal cases.

### Omnibus Conductors and First Aid

Mr. BOSSOM asked the Minister of Transport, in view of the number of road accidents in which omnibuses were involved, whether he would require the conductors of all long-distance omnibuses to be trained in first aid and also

require all such omnibuses to carry a box containing first-aid equipment.—Lieut.-Col. HEADLAM replied: A large proportion of long-distance public service vehicles are express carriages or contract carriages, and such vehicles are required under the existing regulations to carry first-aid outfits. My hon. friend, the Minister of Transport, does not think that he would be justified in adopting my hon. friend's proposal that a training in first aid should be made a condition of employment of either drivers or conductors, but he will consider whether the desirability of a knowledge of first aid could be usefully brought to the notice of those concerned.

### Census and Creation of Families

Sir GEORGE HAMILTON asked the Minister of Health how far the under-estimate of the true number of families in England and Wales in the Census of 1921, amounting to 400,000, as given in the last annual report of the Ministry of Health, was likely to have been repeated in the 1931 Census.—Sir HILTON YOUNG replied: The figures indicate that the checks believed to have been imposed by the housing shortage upon the normal creation of new families up to 1921 has been substantially removed by the date of the 1931 Census.

MONDAY, NOV. 27TH

### Opium Traffic in Far East

Mr. RHYS DAVIES asked the Secretary of State for Foreign Affairs if he was aware that opium was being transported from Persia to Manchuria largely in British ships, and that the authorities in British ports and dependencies on the road between Persia and Manchuria facilitated this trade; whether he would cause a protest to be lodged with the Opium Advisory Committee of the League of Nations and take other steps through the machinery of the League; and whether he would give an assurance that no facilities would in future be given for any sort of traffic in dangerous drugs in any of the British ports or dependencies concerned.—Sir J. SIMON replied: As far as can be ascertained the suggestion made in the first part of the question is unfounded. I may add that the question of the application to Manchuria and Jehol of the provisions of the International Conventions relating to opium and dangerous drugs was considered earlier in the year by the Sino-Japanese Committee of the Assembly of the League of Nations and a recommendation to Governments was adopted. The position generally in Manchuria and Jehol with regard to opium and dangerous drugs was further considered by the Opium Advisory Committee of the League at its recent meeting, and I am informed that the Committee has recommended to the Council that Governments should be asked to scrutinise with special care any applications for export to this territory. The hon. Member may rest assured that the action of the authorities in this country and in all British dependencies will continue to be strictly in accordance with our international obligations and the League recommendations.

The following is the text of the League Advisory Committee's recommendations:—

VII.—With reference to the Geneva Opium Convention of 1925, Chapter V., the Committee recommends to members of the League and to interested States non-members that applications for the export to "Manchukuo" territory of opium or other dangerous drugs should not be granted unless the applicant produces an import certificate in accordance with the Convention of such a nature as to satisfy the Government to which application is made that the goods in question are not to be imported into "Manchukuo" territory for a purpose which is contrary to the Convention. A copy of the export authorisation should accompany the consignment, but Governments should refrain from forwarding a second copy of the export authorisation to "Manchukuo," since such action might be interpreted as a *de facto* recognition of "Manchukuo."

### Rats in House of Commons

Mr. MCENTEE asked the First Commissioner of Works, with regard to the recent discovery of a number of black rats in various parts of the House of Commons building, what numbers had been killed; whether the species found was known to be a dangerous disease carrier; and what steps he was taking in the matter.—Mr. W. ORMSBY-GORE replied: I am not aware that any black rats have been seen in the Palace of Westminster, and none have been killed. Three brown rats were caught in October, and, though the number of traps was increased from 32 to 100 during the present month, only three more have been caught, all of the same variety. Though all rats are objectionable, I do not understand that the brown rat is specially dangerous as a carrier of disease.

### Importation of Drug Materials

Sir WILFRID SUGDEN asked the President of the Board of Trade if he would consider the method and manner of administration of the regulations governing the Additional Import Duties (No. 5) Order, 1932, as they were causing hardship to traders, especially in regard to crude drugs in the form of leaves dried and pressed into bales; and if he would reconsider the position as to the cutting of such leaves, in order to avoid throwing English labourers out of employment.

Mr. TOM SMITH asked the Secretary to the Treasury whether he was aware of the complaints regarding the administration of the Additional Import Duties (No. 5) Order, 1932, with respect to foliage, covering leaves dried and pressed into bales for manufacture into drugs; that if the leaves were cut up they were subject only to the ordinary 10 per cent. duty instead of the duty of 2*d.* per pound, and that the cutting of these leaves has hitherto provided employment in this country; and would he have inquiries made into the administration of the order with a view to enabling traders to determine the cost of their goods in advance.—Mr. HORE-BELISHA (Financial Secretary to the Treasury) replied: I am advised that the dried leaves referred to come within the scope of the duty imposed on foliage by the Additional Import Duties (No. 5) Order, 1932; but that such leaves if imported already cut up or ground do not come within the charge. The question of any alteration of the scope of the existing duty is a matter for consideration in the first place by the Import Duties Advisory Committee, with whom I understand the interests concerned have already communicated.

### Grants to Local Authorities

Mr. THORNE asked the Chancellor of the Exchequer whether he was in a position to state the result of the negotiations with representatives of local authorities in connexion with the contributions of such bodies; whether any reduction of the 60 per cent. contribution towards maintenance of able-bodied unemployed had been agreed upon; and whether he intended to continue the grant of £500,000 to distressed areas in this connexion.—Mr. HORE-BELISHA replied: As regards the first two parts of the question I must ask the hon. Member to refer to the Bill which has now been circulated. As regards the last part of the question the special grant to which the hon. Member refers will not be continued as such, since it was an emergency grant given in anticipation of the more comprehensive relief now proposed to be given under the permanent scheme.

### Indian Officers' Pensions

Sir WILLIAM DAVISON asked the Secretary of State for India whether, in view of the fact that officers of the various Indian services now found it impossible to effect insurances on their pensions, or prospects of pension, he would make a further statement to reassure these officers.

Sir A. M. SAMUEL asked the Secretary of State for India if he was now in a position to make any further statement for the reassurance of those officers of the Indian services who had recently been unable to insure their pensions with the various insurance companies.—Sir S. HOARE replied: I have high authority for saying that Lloyd's and the insurance companies generally do not regard the payment of pensions as a suitable subject for insurance. There is no basis upon which the risk, if there is a risk, can be actuarially assessed. The fact that there is no limit of time cuts across the principle that for all forms of insurance except life insurance there should be a time limit. The principle of average also does not apply, as claims would be either universal or nil. If, therefore, Indian pensions are not insurable, it is, according to information which I have obtained from reliable sources, for exclusively technical reasons which

apply generally to all business of this kind and not because of any particular anxiety about the future constitution of India.

### National Health Insurance Arrears

Miss WARD asked the Minister of Health if he was aware that the absence of regulations dealing with the extension of the period for the payment of arrears under the National Health Insurance Act, 1932, until March 31st, 1934, was causing hardship; and if he would make such regulations as soon as possible.—Sir HILTON YOUNG replied: An explanatory circular relating to the matter referred to by my hon. friend has been prepared and is being sent to all approved societies. The necessary regulations will also be issued within a few days.

### Death Certificates

Mr. HALL CAINE asked the Minister of Health whether his attention had been called to a recent case where a death certificate was issued while the individual concerned was still alive; and whether, in view of the fact that it was legal at the present time for a doctor to issue a certificate without viewing the body if he had visited the person within fourteen days previous to the reported death, he would consider introducing amending legislation to deal with the matter.—Sir HILTON YOUNG replied: I am aware of the case referred to. The question of provision for the medical verification of the fact of death was very fully discussed during the passage of the Births and Deaths Registration Act, 1926, and I am not prepared in the present circumstances to introduce further legislation.

TUESDAY, NOV. 28TH

### Scottish Housing Report

Mr. GUY asked the Secretary of State for Scotland when the Report of the Scottish Housing Committee was likely to be published.—Mr. SKELTON replied: I am informed that the Report is in an advanced stage of preparation, but I cannot yet say when it will be received. It will be published with all expedition.

### Patients Expelled by Panel Doctor

Mr. MCGOVERN asked the Secretary of State for Scotland if he would inquire into the case of Mr. D. R. McClure, 12, Hawthorn-quadrant, Glasgow, who had been expelled, together with his brother, from the panel of his panel doctor, on the ground of certain actions and statements made by their father while acting as a political agent during the recent by-election at Kilmarnock.—Mr. SKELTON replied: An insurance practitioner is entitled, without stating reasons, to give notice at any time to the insurance committee for the area that he desires particular insured persons to be removed from his list and the committee must take the necessary steps to enable such persons to choose another doctor. I am informed that this procedure was followed in the cases referred to by the hon. Member. In these circumstances my right hon friend has no power to intervene and he therefore considers that there is no point on which inquiry would serve a useful purpose.

### Tuberculosis in Gwyrfai Rural District

Major OWEN asked the Minister of Health, whether his attention had been drawn to the prevalence of tuberculosis in the Gwyrfai rural district area; and what steps were being taken to deal with this scourge.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: Yes, Sir. My right hon. friend has received copies of the recent report made by a medical officer of the Welsh National Memorial Association on the subject of the incidence of tuberculosis in this district and certain other parts of North Wales. My right hon. friend understands that a conference of representatives of the Association and of local authorities concerned was held on Nov. 11th, when it resolved that the county councils represented at the conference should be requested to give immediate consideration to the report, and the Association undertook to carry out a number of preventive and educational measures.

### Medical and Scientific Research for Services

Mr. MANDER asked the Lord President of the Council the amount of money spent, and the proportion of time devoted, by the department of Scientific and Industrial Research and the Medical Research Council, during the past three years, to work for the Army, Navy, and Air Force.—Mr. BALDWIN replied: The cost of investigations carried out by the Department of Scientific and Industrial Research for the War Office, the Admiralty, and the Air Ministry is recovered from these Departments respectively, as is shown by the estimates of the Department of Scientific and Industrial Research. The cost of such work in each of the last three financial years was as follows:—

| Year ending March 31st. | Cost of work for Defence Departments (recovered from them). |
|---|---|
| 1931 .. .. .. | £38,734 |
| 1932 .. .. .. | £39,174 |
| 1933 .. .. .. | £39,793 |

Approximately 80 per cent. of these amounts was recovered from the Air Ministry in respect of the work of the Aerodynamics Department of the National Physical Laboratory, which is directed mainly to the study of the science of aviation generally and the results of which are applicable to both Civil and Military aviation. The proportion of the time of the staff of the department devoted to such work in each year is approximately 7 per cent. No expenditure has been incurred by the Medical Research Council exclusively for the purposes of the Admiralty, War Office, or Air Ministry. Such occasional investigations as have been undertaken at the suggestion of those Departments have been of wider interest and the results are available for general use.

## Vacancies

*For further information refer to the advertisement columns*

***Albert Dock Hospital, Connaught-road, E.***—Res. M.O. At rate of £110.

*Birkenhead General Hospital.*—Hon. Asst. Surgeon.

*Blackburn Royal Infirmary.*—Third H.S. £175.

*Brighton, Royal Sussex County Hospital.*—Cas. H.S. £120.

***Cambridge, Addenbrooke's Hospital.***—Res. Anæsthetist and Emergency Officer. At rate of £130.

*Cancer Hospital, Fulham-road, S.W.*—H.S. At rate of £100.

*Central London Ophthalmic Hospital, Judd-street, W.C.*—Jun. H.S. £100.

***Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.***—Hon. First Assistant for Out-Patient Dept.

***Chester Royal Infirmary.***—H.S. £150.

*Cobham, Surrey, Schiff Home of Recovery.*—Res. Surg. O. £200.

*Colchester, Essex County Hospital.*—Asst. H.S. £120.

*Colchester, Royal Eastern Counties' Institution.*—Med. Supt. for Bridge Home, Witham. £550.

*Connaught Hospital, Walthamstow, E.*—Res. Cas. O. At rate of £100.

***Dreadnought Hospital, Greenwich, S.E.***—H.P. and H.S. At rate of £110.

*Durham University and College of Medicine, Public Health Laboratory.*—Whole-time Asst. £350.

***Erith and District Hospital.***—Hon. Consulting Jun. Asst. S., Ophth. S., Orthopædic S., and Surg., Ear, Nose and Throat Dept.

***Exeter, Royal Devon and Exeter Hospital.***—H.P. and H.S. to Spec. Depts. Each at rate of £150.

*Fulham Hospital, St. Dunstan's-road, Hammersmith, W.*—Clin. Asst. £100.

*Glasgow, Victoria Infirmary.*—Whole-time Asst. Radiologist. £550.

***Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.***—H.S. At rate of £100.

***Hertford County Hospital.***—H.P. At rate of £150. Also Hon. Radiologist.

*Hospital for Consumption and Diseases of the Heart, Brompton, S.W.*—Res. M.O. £350.

***Hospital for Sick Children, Great Ormond-street, W.C.***—H.P. and H.S. Each at rate of £100.

***Hospital for Women, Soho-square, W.***—Res. M.O. At rate of £100.

*Hull Municipal Maternity Home and Infants' Hospital.*—Jun. Res. M.O. £100.

*Leamington Spa, Warneford General Hospital.*—Hon. Radiologist.

*Lincoln County Hospital.*—Sen. H.S. At rate of £250.

*Liverpool, Alder Hey Children's Hospital.*—Res. Asst. M.O. £200.

***London Hospital, E.***—Medical First Asst. and Reg. £300.

***London Jewish Hospital, Stepney Green, E.***—Surg. Reg. 60 gns.

*Manchester Ear Hospital, Grosvenor-square, All Saints'.*—Res. H.S. £120.

***Newcastle-upon-Tyne, Royal Victoria Infirmary.***—Radium Officer. £700.

***Northwood, Middx., Mount Vernon Hospital.***—Asst. Clin. Pathologist. £500.

*Norwich, Norfolk and Norwich Hospital.*—H.S., H.S. to Special Depts. Each £120. Also H.P. £120.

***Plymouth, Central Hospital.***—H.S. At rate of £150.

***Plymouth, South Devon and East Cornwall Hospital.***—H.P. and H.S. Each at rate of £120.

*Preston, Biddulph Grange Orthopædic Hospital.*—Jun. H.S. At rate of £150.
*Princess Beatrice Hospital, Richmond-road, Earl's Court, S.W.*—Res. M.O. At rate of £110.
*Princess Elizabeth of York Hospital for Children, Shadwell, E.*—Res. M.O. £200. Also H.S. At rate of £125. Asst. Physician. £40.
*Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.*—H.P. and H.S. Each at rate of £100.
*Reading, Royal Berkshire Hospital.*—H.S. £150.
*Royal Northern Hospital, Holloway, N.*—H.S. At rate of £70.
*Royal London Ophthalmic Hospital, City-road, E.C.*—Out-patient Officer. £100.
*Ryde, Royal Isle of Wight County Hospital.*—Res. H.S. £180.
*St. Mark's Hospital for Cancer, &c., City-road, E.C.*—Clin. Assts. for Out-patients' Dept.
*St. Olave's Hospital, Lower-road, Rotherhithe, S.E.*—H.P. £80.
*St. Peter's Hospital, Whitechapel.*—Res. Med. Supt. £1000.
*St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.*—Clinical Assts.
*Salford Royal Hospital.*—Res. Surg. O. £200. Also two H.S.'s. Each at rate of £125.
*Sheffield, Jessop Hospital for Women.*—H.S. for Maternity Dept. At rate of £120. Also two H.S.'s. Each at rate of £100.
*Southampton, Royal South Hants and Southampton Hospital.*—H.P., Two H.S.'s, Cas. O., and Res. Anæsthetist. Each at rate of £150.
*South-Eastern Hospital for Children, Sydenham, S.E.*—Jun. Res. M.O. At rate of £120.
*Southend-on-Sea General Hospital.*—Second H.S. At rate of £100.
*Stockport Infirmary.*—Res. Surg. O. £250.
*Torquay, Torbay Hospital.*—Hon. Phy. and Hon. Surg. to Spec. Depts.
*Weir Hospital, Grove-road, Balham, S.W.*—Hon. Consultant to Ear, Nose and Throat Dept.
*West London Hospital, Hammersmith-road, W.*—H.P. and Two H.S.'s. Each at rate of £100.
*Wigan, Royal Albert Edward Infirmary and Dispensary.*—H.S. At rate of £150.
*Willesden General Hospital, Harlesden-road, N.W.*—Cas. O. At rate of £100. Also Clin. Assts. for Out-patients' Dept.
*Worcester Royal Infirmary.*—Sen. H.S. £180.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Saltcoats (Ayr).

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for Lambeth County Court District. Applications should reach the Private Secretary, Home Office, Whitehall, London, S.W., not later than Dec. 16th.

# Medical Diary

## SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, Dec. 5th.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Mr. A. T. Fripp: Torticollis with Absence of Lateral Mass of Atlas. 8 P.M., PATHOLOGY. Dorothy S. Russell and Hugh Cairns: Pachymeningitis Interna Hæmorrhagica Associated with Carcinomatosis and Sarcomatosis of the Dura Mater. W. Cramer: Prophylaxis of Cancer. G. M. Findlay and T. Dalling: Lymphomatosis in Poultry. Honor B. Fell and R. G. Canti: The Cultivation of Skeletal Tissue. (Cinema demonstration.) J. A. Murray: *Demodex folliculorum* in the Rat. (Demonstration.)
WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Discussion on the Conception of the Epidemic Constitution in the Light of History. Opening paper: Dr. E. W. Goodall: Infectious Diseases and Epidemiology in the Hippocratic Collection.
THURSDAY.—8.15 P.M., TROPICAL DISEASES AND PARASITOLOGY. Discussion on Avitaminosis (B Group) in Tropical and Temperate Countries. Opening papers by Dr. Harriette Chick, Prof. R. A. Peters, Dr. Lucy Wills, and Prof. S. J. Cowell. Members of the Therapeutics and Pharmacology Section are specially invited to attend the Meeting.
FRIDAY.—5 P.M., CLINICAL. (Cases at 4 P.M.) Prof. H. H. Woollard: The Anatomy and Physiology of the Suprarenal Gland. Dr. Levy Simpson: Clinical and Pathological Aspects of the Suprarenal Gland. Cases will be shown by Dr. Levy Simpson, Dr. J. C. Heather, Dr. G. M. Wauchope, and Dr. Maurice A. Cassidy. Specimens will be shown by Dr. F. Graham Lescher and Dr. Robb Smith, Dr. Reginald Lightwood, Dr. R. W. B. Ellis, and others. 5 P.M., OPHTHALMOLOGY. Clinical Meeting at the Western Ophthalmic Hospital, Marylebone-road, N.W. Tea at 4.30 P.M. 8.15 P.M., OBSTETRICS AND GYNÆCOLOGY. Prof. Aschheim: Presence and Effect of Female Sex Hormones and Gonadotropic Substances.

BRITISH INSTITUTE OF RADIOLOGY, at the Central Hall, Westminster, S.W.
WEDNESDAY, Dec. 6th.—2.30 P.M., Official opening of Exhibition by Lord Horder. 5 P.M., Dr. Stanley Melville: Presidential address.
THURSDAY.—10 A.M., Physical and Technical papers. 2.30 P.M., Prof. Woodburn Morison: Tumours of Bone. 5 P.M., Dr. N. S. Finzi: Radium Treatment in the Future. (Mackenzie Davidson Memorial lecture.)
FRIDAY.—10 A.M., Discussion on Radiation of Neoplasm with Special Reference to the Value of Hard and Soft Rays. To be opened by Dr. F. Hernaman-Johnson, Dr. W. M. Levitt, Dr. G. F. Stebbing, and Dr. Russell J. Reynolds. 2.30 P.M., Mr. A. Bouwers, D.Sc.: Modern X Ray Developments. (Silvanus Thompson Memorial lecture.)

WEST KENT MEDICO-CHIRURGICAL SOCIETY.
FRIDAY, Dec. 8th.—8.45 P.M. (at the Miller General Hospital, Greenwich), Sir Charles Gordon-Watson: Difficulties and Dangers in Rectal and Colon Surgery.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS, Pall Mall East, S.W.
THURSDAY, Dec. 7th.—5 P.M., Mr. L. W. G. Malcolm: Prehistoric and Primitive Surgery. (Thomas Vicary lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Dec. 4th to SATURDAY, Dec. 9th.—LONDON LOCK HOSPITAL, Dean-street, W. Course in Venereal Disease. Afternoons and evenings.—BRITISH RED CROSS CLINIC, Peto-place, N.W. Course in Rheumatism. Tues. and Thurs., at 8.30 P.M.—INFANTS HOSPITAL, Vincent-square, S.W. Course in Diseases of Infants. Afternoons.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Course in Dermatology. Afternoons.—The above courses are open only to Members and Associates of the Fellowship of Medicine.—LECTURE HALL, Manson House, 26, Portland-place, W. Thurs., 8.30 P.M., Debate on the motion "that operations for the removal of tonsils are too often performed without adequate cause." Principal speakers: Mr. Herbert Tilley and Dr. Alison Glover, Dr. Dan McKenzie and Mr. Archer Ryland. The debate is open to all members of the medical profession.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Dec. 5th.—3.15 P.M., Mr. A. L. Punch: Artificial Pneumothorax.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
WEDNESDAY, Dec. 6th.—4 P.M., Dr. John Ryle: Migraine and Its Variants.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
MONDAY, Dec. 4th and following TUESDAY, WEDNESDAY, THURSDAY, and FRIDAY.—12.30 P.M., Course in Methods of Examination and Diagnosis.
FRIDAY.—4 P.M., Mr. C. Gill-Carey: Rhinological Aspects of Asthma.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
TUESDAY, Dec. 5th.—11.30 A.M., Dr. David Nabarro: Immunisation Methods Against Scarlet Fever and Measles.
WEDNESDAY.—9.30 A.M., Skin Clinic. 2 P.M., Dental Clinic.
THURSDAY.—2 P.M., Tonsils, Adenoids, and Anæsthesia.
SATURDAY.—9.30 A.M., Eye Clinic.
Medical and Surgical Out-patient Clinics: daily from Mond. to Sat., 10 A.M. to 12 noon. Medical Wards: mornings, 10 A.M., Mond., Wed., Thurs., and Sat.: afternoons, 2 P.M., Mond., Tues., Thurs., and Frid. Surgical Wards: Tues., Thurs., Frid. mornings, and Wed. afternoon.

CHARING CROSS HOSPITAL MEDICAL SCHOOL.
SUNDAY, Dec. 3rd.—10.30 A.M., Dr. C. K. J. Hamilton: The Premature Infant. 11.45 A.M., Dr. J. E. M. Wigley: Fungi on the Human Skin.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Dec. 7th.—4.30 P.M., Dr. R. A. McCance: The Rôle of Vitamins in Health. 9 P.M., Mr. H. L. C. Wood: Common Surgical Affections of the Tongue and Jaws.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Dec. 6th.—4 P.M., Mr. V. Z. Cope: Demonstration of Surgical Cases.

ROYAL INSTITUTE OF PUBLIC HEALTH, 23, Queen-square, W.C.
WEDNESDAY, Dec. 6th.—4 P.M., Dr. D. M. Odlum: Citizenship in Relation to Mental Health.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Dec. 5th.—5 P.M., Dr. H. Corsi: Leukæmia Cutis. Mycosis Fungoides.
THURSDAY.—5 P.M., Dr. R. T. Brain: Vesicular and Bullous Eruptions.

CHADWICK PUBLIC LECTURES.
TUESDAY, Dec. 5th.—8 P.M. (at the Institution of Mechanical Engineers, Storey's-gate, Westminster), Mr. J. H. Coste, F.I.C.: Rural Sanitation.

LEEDS GENERAL INFIRMARY.
TUESDAY, Dec. 5th.—4 P.M., Dr. Burrow: Demonstration of Medical Cases.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Dec. 5th.—4.15 P.M., Dr. Crighton Bramwell: D.A.H.
FRIDAY.—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.

ANCOATS HOSPITAL, Manchester.
THURSDAY, Dec. 7th.—4.15 P.M., Dr. A. Henshaw: A Modern Pathological Department, with Demonstration.

GLASGOW, Post-graduate Lectures.
TUESDAY, Dec. 5th.—3.30 P.M. (in the Faculty Hall, Vincent-street), Mr. A. H. Edwards: Review of the Uses of Physical Treatment.
WEDNESDAY.—4.15 P.M. (at the Victoria Infirmary), Dr. Ivy McKenzie: Surgical Cases.

# NOTES, COMMENTS, AND ABSTRACTS

## BITING SPIDERS

THE "jockey spider" of Australia, described in our issue of Sept. 9th (p. 625), is closely akin to *Latrodectus mactans*, the "black widow" or "shoe-button" spider of the United States. Bites from these spiders give rise to alarming symptoms and may cause the death of the patient. The lesion is often found on the genitals, for the insects haunt outdoor privies, but Groesbeck Walsh and W. G. Morgan [1] remind us that spiders may be encountered in other places, and bites may therefore occur on any part of the body. Of their series of 29 patients at least 16 were bitten while using an outdoor toilet, but the remainder met the spider in houses, fields, garages, and even in bed. One man was bitten between the toes through a broken shoe while working in the fields, one was attacked in a bowling alley, another in a kitchen, and the sites affected in this series were the hand, foot, leg, knee, and hip, as well as the genitals. The symptoms include abdominal rigidity, pain, and shock, and may be sufficiently acute to favour a diagnosis of ruptured gastric ulcer. The possibility of arachnoidism has to be borne in mind in countries where these spiders are to be found; but Morgan and Walsh make it clear that the diagnosis of spider-bite cannot be set aside simply because no lesion is found on the genitals. Moreover, the patient is sometimes so much collapsed that he is unable to give a history of having been bitten, or he may not recall the bite. In such cases rigidity, [illegible] only of the abdominal wall but of other large [illegible]lar masses—particularly of the lumbar region a[illegible]ighs—helps to establish the diagnosis. Walsh and Morgan gave intravenous glucose to one patient with such apparent benefit that they feel encouraged to try this treatment on future cases.

Dr. Djamil Tutunji Pasha, of Amman, Transjordania, informs us of a case [2] of spider-bite which he successfully treated with anti-scorpion serum. The spider was a small black one known locally as *Akis*, and its bite is said to be always fatal. The patient, a man of 20, had tonic generalised convulsions with an abdomen as hard as a board and a very rapid pulse. An injection of morphine, 0·02 g., had no effect on the pain, and Nembutal was prescribed. But 24 hours after the bite the patient was no better. An injection of anti-scorpion serum was then given, and within two hours the clinical picture had changed. Pain and sweating ceased, and the sphincters relaxed, so that micturition and defæcation were successful. After four days the patient returned to work as an errand boy.

## ENDOPHLEBITIS HEPATICA OBLITERANS

R. H. Rigdon [3] reports a case showing obstruction of the hepatic veins associated with thrombophlebitis of the hepatic portion of the inferior vena cava, of which condition only a few other examples have been published.

The patient was a woman, aged 22, who when first seen was found to have ascites, for which repeated paracentesis became necessary. A splenectomy was performed, and at the laparotomy the viscera were found normal except the spleen, which was enlarged, and on microscopy fibrotic. The histological findings in a biopsy of the liver were those of chronic passive congestion. Death occurred about eighteen months later, shortly after the recurrence of ascites; at the necropsy the liver was enlarged and presented a somewhat "hobnail" appearance. The portal vein showed no obstruction, but in the intrahepatic portion of the inferior vena cava several thrombi extending up to 1 cm. into the lumen were found; some of the mouths of the hepatic veins were obstructed by these thrombi, while that of the right hepatic vein was completely obliterated. Microscopically the wall of the inferior cava showed an inflammatory process limited to its intrahepatic portion, but there was nothing to suggest an endophlebitis of the hepatic veins, even though thrombi were attached firmly to them. The clots were sterile. In the first part of the duodenum an ulcer with a necrotic base was discovered.

Rigdon suggests that the peptic ulcer served as a focus of infection from which the phlebitis of the inferior cava arose, though there was no definite evidence of the route followed by the infection. The occurrence of ascites was explained by obstruction by thrombi in the vena cava and hepatic veins, although the absence of conspicuous collateral circulation suggests that the obstruction was not severe enough to cause the development of visible accessory channels. There appears to be little if any justification for the view that endophlebitis hepatica obliterans is a distinct disease entity, and in most reported cases it has been associated with inflammation of the hepatic portion of the inferior vena cava.

[1] Amer. Jour. Med. Sci., September, 1933, p. 413.
[2] Folia Med. Intern. Oriental., 1933, i., 233.
[3] Bull. Johns Hopkins Hosp., October, 1933, p. 162.

## CHILDREN'S VIEWS ON DOCTORS

THE report on the West Riding county council scholarship examination mentions that children were asked to write 12 lines about "Doctors." The examiners state that the resulting paragraphs were of all qualities. Many contained good ideas and the tendency to enumeration was less marked than usual. A large number of children, however, could not resist the temptation to enumerate (with disastrous spelling results) the many diseases a doctor can cure. Many showed themselves familiar with the fact that doctors are not always doctors of medicine, but there was general contempt for the other kinds: "There are animal docters, docters of Health, docters of knowledge and docters of Prayer, but they are not so good as curing docters." Most children showed an affection for their doctors, a keen appreciation of their efforts, and complete faith in their ability to cure. "Doctors can cure everything" was the general pronouncement, though a few echoed the boy who wrote "doctors cure you sometimes not often." There was some prejudice against women doctors, panel doctors, and other types. "I would rather have a man doctor because I think *they* know what they are doing." "When doctors are on the panel, it makes them hard. That's when it means, panels of doors are hard." "Prescriptions are written in Latin so that you can't know what you are getting. If you did, the doctors and chemists would lose their profit." But the majority love and trust their doctors, though their reasons are sometimes disconcerting. "Doctors are very kind people. Sometimes they order the schools to close."

## A PRESCRIBER'S LIST

AFTER a lapse of two and a half years Messrs. Roberts and Co., of 76, New Bond-street, London, W.1, have issued a new edition of their guide to proprietary medical preparations. The list is alphabetical and nowhere else is it so easy to find information as to the maker, composition, form, price, and dose of such remedies and the indications suggested for them. This fourth edition, despite the removal of some preparations which were rarely demanded, is larger than its predecessor, and the reader may well wonder how many of these myriad weapons used in the war on disease have really any sharpness. Be this as it may, here is a list of most of those most often offered by the manufacturers; and although there are several striking omissions Messrs. Roberts are willing to answer queries submitted to them concerning remedies whose names do not appear. Practitioners may obtain copies, on application, free of charge.

## THE MEDICAL REGISTER

THE REGISTRAR of the General Medical Council informs us that orders for the office edition of the Medical Register, 1934, published by the Council at the special price of 10s. per copy, post free, must be received, with a remittance, at the office of the Council, 44, Hallam-street, London, W.1, not later than Dec. 31st, 1933. The office edition differs from the ordinary edition in that it does not contain reprints of the Medical and Dentists Acts and other preliminary matter, and is printed on more inexpensive paper and bound in boards. It includes, however, the same entries relating to registered medical practitioners as are included in the ordinary edition.

The Council also prepare monthly lists of the names added to, and removed from, the Register, and particulars of the terms and conditions upon which copies of these lists may be made available can be obtained on application.

## NEW PREPARATIONS

COLLOSOL HALIBUT LIVER OIL.—We have received from the Crookes Laboratories (British Colloids Ltd., Park Royal, London, N.W.10) examples of their new forms of halibut oil preparations. Halibut Liver Oil is a natural concentrate containing no synthetic vitamins, and has not been altered in any way by chemical processes which have been directed towards the securing of pure uncontaminated oil with a high natural vitamin content. The oil is supplied also in capsules. Halidexol is an emulsion miscible in its own volume of water, milk, or wine, making the oil more palatable to many people. Halimalt has been specially devised for the use of weakly children requiring nourishing tonic food, the oil being combined with malt extract. The various preparations are put up in convenient and elegant form. A label is affixed to each bottle of the Collosol Brand Halibut Liver Oil, stating the number of the particular batch, the date of bottling, and the vitamin value by the blue unit B.P. test (10 per cent. dilution), and, thirdly, the biological and spectroscopic tests.

VAGOTONINE.—The preparation is manufactured by the Byla Establishment, Paris, and put upon the British market by the Anglo-French Drug Co., Guilford-street, London, W.C. This hormone is recommended in the treatment of arterial hypertension and sympathetic imbalance, and its value, it is claimed, has been established by a large number of chemical and physiological tests, while its use has obtained high endorsement. The preparation is supplied in ampoules with full instructions for administration.

HONICOSE (Honicose Products Sales Ltd., 26, Copper-street, Manchester).—The value of glucose in various forms of exhibition to meet various conditions is well established, but taken by the mouth its insipidity has been an objection to it as an article of diet. Honicose is a blend of glucose sugars with 20 per cent. of honey, and is put on the market with a special view to the diet of children needing the nourishing and energising effects of glucose, while it is also recommended as an addition to the diet of the athlete. The value of an adequate supply of glucose in certain cardiac diseases has been pointed out in a recent leading article in these columns; and in conditions where physical exhaustion is the main trouble to be combated it is reasonable to suppose that Honicose should be of value. Its palatability is of obvious service where children are concerned. It is very conveniently put up by the manufacturers.

PURE CRYSTALLINE VITAMIN C (ASCORBIC ACID B.D.H.).—We have received from The British Drug Houses, Ltd., Graham-street, London, N.1, a sample of this drug recently introduced for industrial and scientific purposes. The product is issued in tablets, each containing 5 milligrammes of the substance, and in this form is suitable for administration either in making isotonic solutions for intravenous injection or for oral exhibition.

## CHRISTMAS CHOCOLATES

CHOCOLATES are much in vogue to give to hospital patients where the preparations are permitted. We have received from Messrs. Cadbury Bros., Ltd., a selection of their new specialties. The feature introduced this year consists of a series of boxes specially designed by famous artists, so that after the chocolates of well-known quality have been consumed the box will remain as a reminder of past satisfaction. An addition to the firm's range, which is stated to be extremely popular, is a series of half-pound drums of chocolate biscuits; six of these containers include the milk, table, and B.B. assortments. A tin of Bourn-vita, the food-drink introduced last year, was included in the samples sent.

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WANTED: FIRST-AID LECTURES.—Mrs. Eva M. Hubback, principal of Morley College for Working Men and Women, 61, Westminster Bridge-road, London, S.E., writes: "We have a class here of about eight unemployed men who have been following a course in first aid. The lecturer is leaving to go abroad for the winter, and I should be most grateful if one of your readers with some experience of teaching would offer to take it. The class meets on Fridays from 2.30 to 4 P.M."

DIIODOTHYRONINE.—Messrs. Burroughs Wellcome and Co. inform us that supplies of 3:5 diiodothyronine, whose use in myxœdema was described by Dr. A. B. Anderson, Prof. C. R. Harington, and Prof. D. Murray Lyon in our issue of Nov. 11th (pp. 1081 and 1098), may be obtained from them under its chemical name of diiodothyronine.

LONDON MEDICAL SOCIETIES.—In the list of societies on p. 1009 of THE LANCET of Oct. 28th, the name of the president of the Royal Medico-Psychological Association should have been given as Dr. F. Douglas Turner.

THE city address of the Scottish Widows' Fund and Life Assurance Society during rebuilding at 28, Cornhill, E.C.3, is 52, Bishopsgate, London, E.C.2.

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DEMONSTRATIONS OF CONTRACEPTIVE TECHNIQUE.—The Society for Constructive Birth Control and Racial Progress have arranged for demonstrations to be given by Dr. Evelyn Fisher on Wednesday, Dec. 6th, at 2.30 P.M., at their clinic. They will be open to medical practitioners and senior medical students. Application may be made to the hon. secretary of the society, 108, Whitfield-street, London, W.1.

# Births, Marriages, and Deaths

## BIRTHS

DOWNING.—On Nov. 24th, at Newport-road, Cardiff, the wife of Dr. Ralph Downing, of a son.

KELVIN-DAVIES.—On Nov. 17th, at St. Albans, the wife of D. Kelvin-Davies, L.D.S. R.C.S., of a son.

## MARRIAGES

BROCKINGTON—FURZE.—On Nov. 20th, at Chillington, S. Devon, Colin Fraser Brockington, M.A., M.D., D.P.H. Camb., to Joyce Margaret Furze, only daughter of Mr. and Mrs. A. J. Furze, of Finchley, London.

WALSH—TURNER.—On Nov. 23rd, at St. Patrick's Church, Hove, David Henry Walsh, M.D., to Francis Ellen, daughter of the late Henry Rudd, Barrister-at-Law, and widow of Sidney Hyde Turner, Solicitor, of Aldermanbury, E.C.

## DEATHS

BICKERTON.—On Nov. 23rd, at Rodney-street, Liverpool, Thomas Herbert Bickerton, ophthalmic surgeon, aged 76.

BOURKE.—On Nov. 22nd, at Hertford, Lieut.-Colonel John Joseph Bourke, C.I.E., retired officer of the Indian Medical Service.

PARTRIDGE.—On Nov. 20th, Victor Stanley Partridge, M.R.C.S., L.R.C.P., of Coldharbour-lane, S.E.

PURVES.—On Nov. 23rd, David Bethune Purves, M.B., Ch.B. Edin., aged 30.

*N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*